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ICDF Complex Operations and Maintenance Plan

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ICDF Complex Operations and Maintenance Plan

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ABSTRACT

This Operations and Maintenance (O&M) Plan describes how the Idaho National Laboratory (INL) conducts operations, winterization, and startup of the Idaho CERCLA Disposal Facility (ICDF) Complex. The ICDF Complex is the centralized INL facility responsible for the receipt, storage, treatment (as necessary), and disposal of INL Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation wastes. The ICDF Complex, including a buffer zone, covers approximately 40 acres, with a landfill disposal capacity of approximately 510,000 yd^3. The ICDF Complex is designed and authorized to accept INL CERCLA-generated waste and includes the necessary subsystems and support facilities to provide a complete waste management system. The ICDF Complex comprises the landfill, evaporation pond (two cells), leachate collection system, staging and storage areas, decontamination facility, administrative facility, and other systems necessary for operations. This O&M Plan presents the operational approach and requirements for operating the various systems/components that are a part of the ICDF. Appendix A to this O&M Plan presents detailed procedure overviews describing key operational procedures used at the ICDF Complex. Each procedure overview is numbered to align with the corresponding section of the O&M Plan and will continue to be used to develop detailed operating procedures for the ICDF Complex. Appendix B to this O&M Plan identifies the anticipated equipment needs for ICDF operations. This O&M Plan presents the planned operational process based upon an evaluation of the remedial action requirements set forth in the Operable Unit 3-13 Final Record of Decision.

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ACRONYMS

ACL	administrative control level
ACM	asbestos-containing material
ALARA	as low as reasonable achievable
ALC	acceptable leachate concentration
ALR	action leakage rate
AOC	area of contamination
ARAR	applicable or relevant and appropriate requirement
ASA	Auditable Safety Analysis
ASTM	American Society for Testing and Materials
BCG	biotic concentration guide
CAM	continuous air monitor
CAMU	Corrective Action Management Unit
CAPS	ConCover All Purpose Spray
CERCLA	Comprehensive Environmental, Response, Compensation and Liability Act
CFA	Central Facilities Area
CFR	*Code of Federal Regulations*
CLP	Contract Laboratory Program
CM	configuration management
CMP	Configuration Management Plan
COPC	contaminant of potential concern
CWID	CERCLA Waste Inventory Database
CWP	Construction Work Plan
DAC	derived air concentration
DAR	Document Action Request
DCS	Distributed Control System

DEQ	Idaho Department of Environmental Quality
DMCS	Document Management Control System
DOE	U.S. Department of Energy
DOE-ID	U.S. Department of Energy, Idaho Operations Office
DOT	Department of Transportation
DQO	data quality objective
ECC	Emergency Communication Center
ECS	Emergency Communication System
EDF	Engineering Design File
ELCR	excess lifetime cancer risk
EPA	U.S. Environmental Protection Agency
ES&H	Environment, Safety, and Health
FCF	Facility Change Form
FFA/CO	Federal Facility Agreement and Consent Order
GCL	geosynthetic clay liner
GERT	General Employee Radiological Training
GIS	geographic information system
GM	Geiger-Mueller
HAP	hazardous air pollutant
HASP	Health and Safety Plan
HAZWOPER	Hazardous Waste Operations and Emergency Response
HDPE	high-density polyethylene
HEPA	high-efficiency particulate air (filter)
HI	hazard index
HMI	human-machine interface
HPIL	Health Physics Instrumentation Laboratory

HQ	hazard quotient
HVAC	heating, ventilating, and air conditioning
HWMA	Hazardous Waste Management Act
I&C	instrumentation and control
ICDF	Idaho CERCLA Disposal Facility
ICP	Idaho Cleanup Project
ID	identification
IDAPA	Idaho Administrative Procedures Act
IDW	investigation-derived waste
INEEL	Idaho National Engineering and Environmental Laboratory
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
IWTS	Integrated Waste Tracking System
JSA	Job Safety Analysis
LCRS	Leachate Collection Recovery System
LDR	land disposal restriction
LDRS	Leak Detection and Recovery System
LLW	low-level waste
LO/TO	lockout/tagout
M&O	management and operations
MCL	maximum contaminant level
MEL	master equipment list
MLLW	mixed low-level waste
NARA	National Archives and Records Administration
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOAA	National Oceanic and Atmospheric Administration

O&M	operations and maintenance
OSHA	Occupational Safety and Health Act
OU	operable unit
OWTF	On-Site Waste Tracking Form
P&ID	piping and instrumentation diagram
PCB	polychlorinated biphenyl
PCM	personnel contamination monitor
PdM	predictive maintenance
PE	professional engineer
PLC	programmable logic controller
PLDRS	Primary Leak Detection and Recovery System
PLN	plan
PM	project manager
PPE	personal protective equipment
QA	quality assurance
QA/QC	quality assurance/quality control
QAPjP	Quality Assurance Project Plan
RadCon	Radiological Control
RAO	remedial action objective
RAWP	Remedial Action Work Plan
RBA	Radiological Buffer Area
RCIMS	Radiological Control Information Management System
RCRA	Resource Conservation and Recovery Act
RCT	radiological control technician
RD/CWP	Remedial Design/Construction Work Plan
RD/RA	remedial design/remedial action

ROD	Record of Decision
RWP	Radiological Work Permit
SAP	Sampling and Analysis Plan
SLDRS	Secondary Leak Detection and Recovery System
SLERA	Screening Level Ecological Risk Assessment
SME	subject matter expert
SO	system operation
SRPA	Snake River Plain Aquifer
SSA	Staging and Storage Annex
SSC	structure, system, and component
SSSTF	Staging, Storage, Sizing, and Treatment Facility
SVOC	semivolatile organic compound
TAP	toxic air pollutant
TCLP	toxicity characteristic leaching procedure
TEDE	total effective dose equivalent
TFR	technical and functional requirement
TLD	thermoluminescent dosimeter
TPR	technical procedure
TRU	transuranic
TSCA	Toxic Substances Control Act
UBC	Uniform Building Code
USC	*United States Code*
UTS	universal treatment standard
VOC	volatile organic compound
VPP	Voluntary Protection Program
WAC	Waste Acceptance Criteria

WAG	waste area group
WGS	Waste Generator Services
WMP	Waste Management Plan

ICDF Complex Operations and Maintenance Plan

1. INTRODUCTION

This Operations and Maintenance (O&M) Plan is part of the Remedial Action Work Plan (RAWP) documentation for the Idaho CERCLA Disposal Facility (ICDF) Complex at Idaho National Laboratory (INL) (formerly the Idaho National Engineering and Environmental Laboratory [INEEL]). The ICDF Complex was constructed southwest of the Idaho Nuclear Technology and Engineering Center (INTEC) at Waste Area Group (WAG) 3, Operable Unit (OU) 3-13. As shown in Figure 1-1, INTEC is located in the south-central portion of INL.

The U.S. Department of Energy Idaho Operations Office (DOE-ID) authorized a remedial design/remedial action (RD/RA) for INTEC to satisfy the requirements of the *Final Record of Decision, Idaho Nuclear Technology and Engineering Center, Operable Unit 3-13* (DOE-ID 1999). The Record of Decision (ROD) selected "Removal and On-Site Disposal" as the remedy for OU 3-13, Group 3, "Other Surface Soils." To support this remedy, the ROD requires that an on-Site landfill be constructed to receive Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) remediation wastes generated at INL. The ICDF Complex is the on-Site facility designed and constructed to implement the ROD requirements.

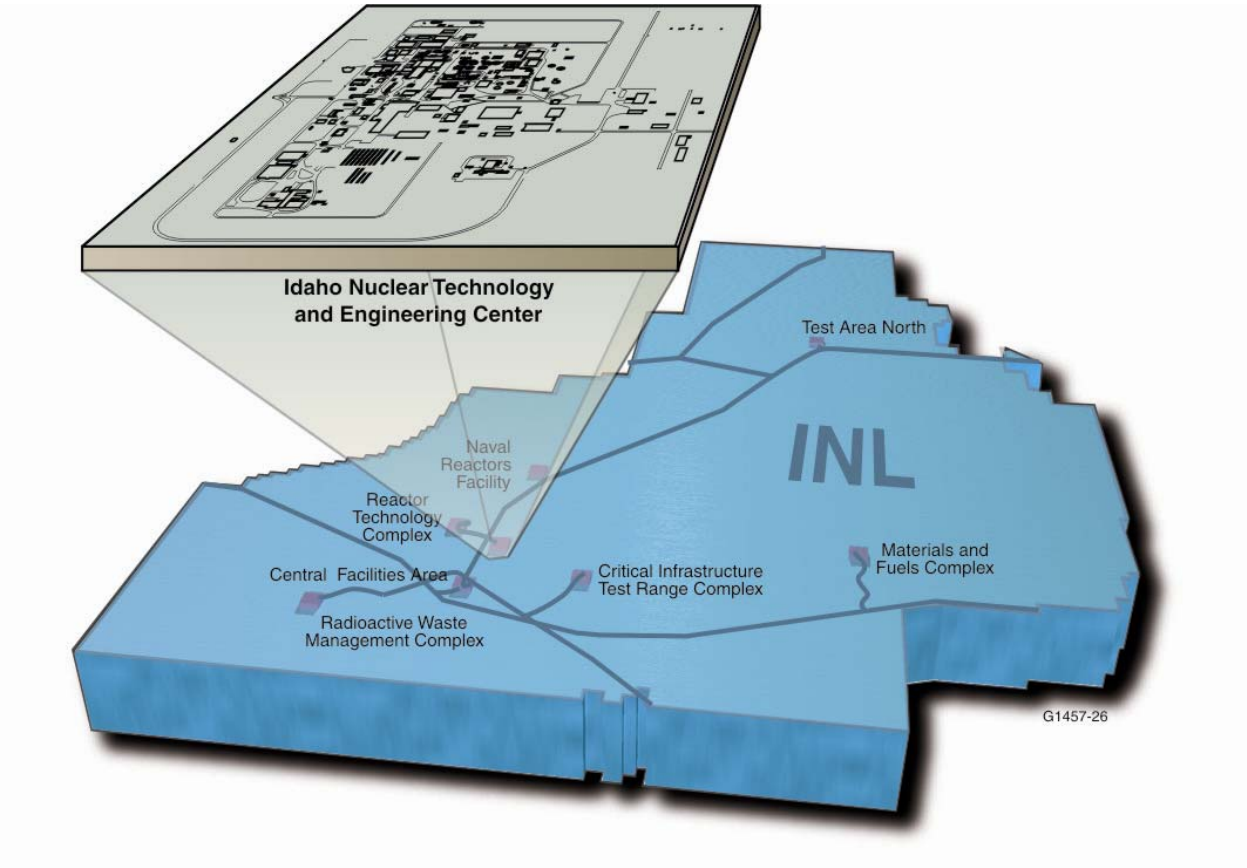

Figure 1-1. Location of INTEC at Idaho National Laboratory.

The ICDF Complex is located near the southwest corner of INTEC and, as shown in Figure 1-2, is immediately west of the previous INTEC percolation pond area. The area of the ICDF Complex, including a buffer zone, covers approximately 40 acres, with a landfill disposal capacity of approximately 510,000 yd^3. The components of the facility include the landfill disposal cells, an evaporation pond with two cells, and the Staging, Storage, Sizing, and Treatment Facility (SSSTF), which includes the following systems, structures, and components (SSCs):

- Administration trailer
- Scale
- Decontamination (or "decon") building (with treatment area)
- Contaminated equipment pad
- Staging and storage areas (includes three staging areas, two storage areas, and two other areas to facilitate ICDF Complex operations).

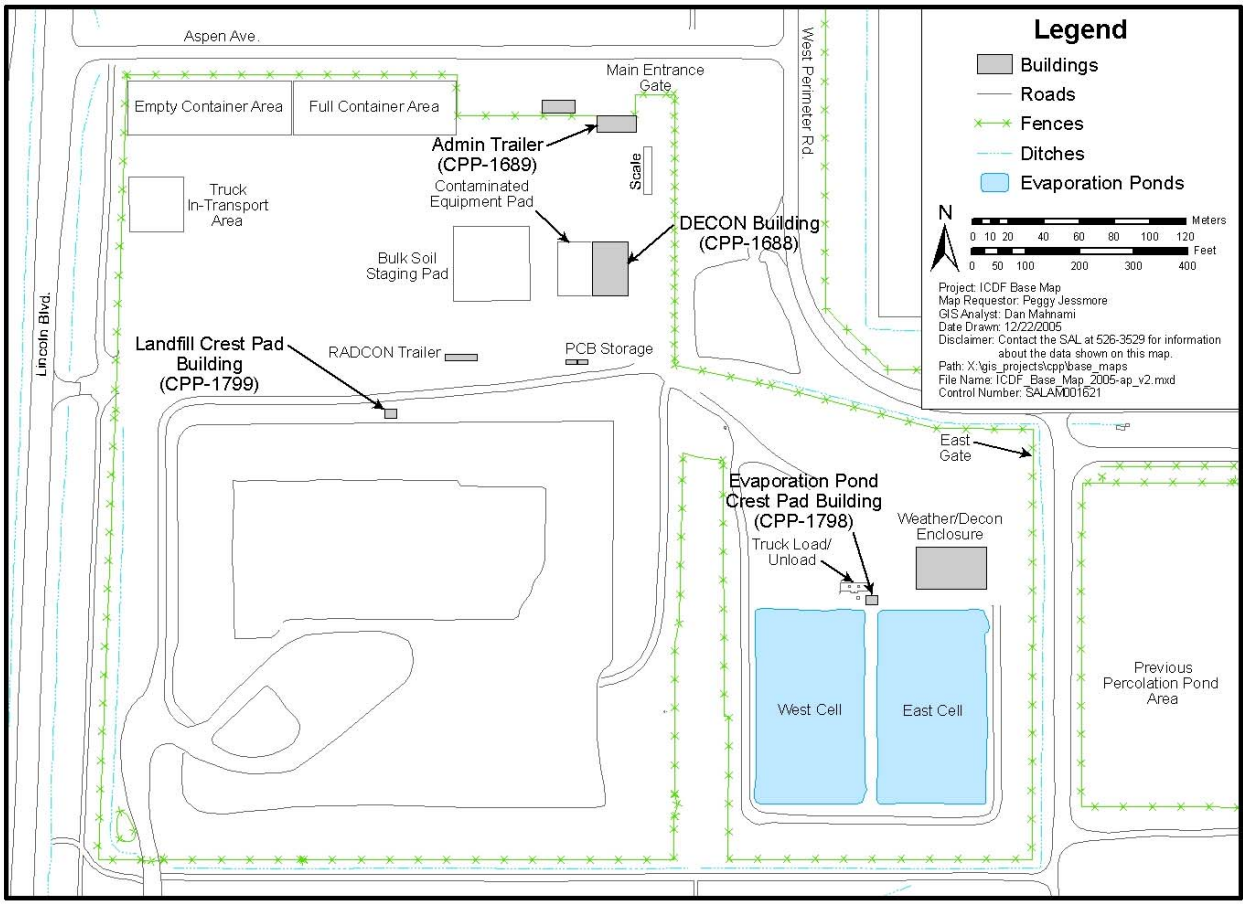

Figure 1-2. Location of the ICDF Complex components and proximity to Idaho Nuclear Technology and Engineering Center.

The ICDF Complex will continue to serve as the consolidation point for CERCLA-generated wastes within INL boundaries. In addition to receiving WAG 3 waste, the landfill also will receive CERCLA-generated wastes from outside WAG 3 that meet the land disposal restriction (LDR) requirements, in accordance with the Waste Acceptance Criteria (WAC) included as Section 5 of the *ICDF Complex Waste Acceptance Criteria* (DOE-ID 2005a). (Waste generated within the WAG 3 area of contamination [AOC] that has not triggered placement is not required to meet LDR criteria.) Placement is defined in U.S. Environmental Protection Agency (EPA) Directive 9347.3-O5FS (EPA 1989). The ICDF landfill meets the substantive requirements of Resource Conservation and Recovery Act (RCRA) Subtitle C (42 USC § 6921 et seq.), Idaho Hazardous Waste Management Act (HWMA 1983), U.S. Department of Energy (DOE) Order 435.1, and Toxic Substances Control Act (TSCA) polychlorinated biphenyl (PCB) landfill design and construction requirements (15 USC § 2601 et seq.). Detailed information regarding the design and construction of the landfill can be found in the *INEEL CERCLA Disposal Facility Remedial Design/Construction Work Plan* (DOE-ID 2002a).

The evaporation pond, designated as an ICDF Complex RCRA Corrective Action Management Unit (CAMU) in the OU 3-13 ROD, will be the disposal site for ICDF leachate and other aqueous wastes generated as a result of operation. In addition, WAG 3 AOC aqueous wastes, such as purge water, may be disposed in the evaporation pond in accordance with the ICDF evaporation pond WAC included as Section 6 of the ICDF Complex WAC (DOE-ID 2005a). Detailed information regarding the design and construction of the evaporation pond can be found in the *INEEL CERCLA Disposal Facility Remedial Design/Construction Work Plan* (DOE-ID 2002a).

Additional facilities will provide waste-handling operations for the ICDF Complex (e.g., receiving, staging, storing, treating, and repackaging incoming waste as necessary, for disposal in the ICDF landfill, ICDF evaporation pond, or an off-Site facility). Detailed information regarding the design and construction of these facilities can be found in the *Remedial Design/Construction Work Plan for the Waste Area Group 3 Staging, Storage, Sizing, and Treatment Facility* (DOE-ID 2002b).

This O&M Plan for the ICDF Complex is necessary to ensure compliance with regulatory requirements that provide protection of human health and the environment. This plan has been developed in accordance with EPA fact sheet EPA 540-F-01-004 (EPA 2001) to describe activities and procedures within the ICDF Complex that satisfy the OU 3-13 ROD requirements.

The ICDF Complex O&M Manual will be a separate document that will include operating procedures to allow for the implementation of the principles and practices described in this plan. The manual will compile the detailed procedures that are developed and will be revised, as necessary, as the operations staff gain experience, gather information, and revise processes and equipment throughout the operating life cycle of the facility. Detailed operating procedures that supplement the operating procedure overviews contained in this O&M Plan also will be prepared. The detailed procedures will integrate the performance requirements and operating criteria of DOE-ID and its subcontractors to ensure safety and efficiency in operation of the ICDF Complex. The O&M Manual will be available on-Site for Agency information at the prefinal inspection.

Several other documents have been prepared to describe the operation of specific portions of the ICDF Complex and must be used concurrently with this plan. Section 1.4 of the ICDF Complex RAWP (DOE-ID 2005b) identifies additional documents that provide supplementary detail regarding the ICDF Complex operations.

1.1 O&M Plan Purpose and Organization

The purpose of this O&M plan is to describe the actions to be employed by the Idaho Cleanup Project (ICP) contractor at the ICDF Complex. In addition, this plan describes O&M practices to be developed in future stages of site development.

This plan was constructed as recommended by the EPA fact sheet, "Operations and Maintenance in the Superfund Program" (EPA 2001). (Similarly, the ICDF Complex O&M Manual will be consistent with that EPA fact sheet to provide the technical information and data, protocols, parameters, operational procedures, staffing, training, and maintenance schedules needed for the facility.) The information contained in this plan has been organized into the following sections:

- Section 1, Introduction, presents O&M plan synopsis, organization, ICDF Complex facility descriptions, and operation overviews.

- Section 2, ICDF Complex Operational Organization, presents personnel organization, job descriptions, and training requirements.

- Section 3, Operational Limits and Environmental Monitoring, presents operational limits and monitoring requirements, including discussions addressing WAC, Idaho Administrative Procedures Act (IDAPA) standards, National Emission Standards for Hazardous Air Pollutants (NESHAP), risk, groundwater, radiological controls, action leakage rate, environmental monitoring and sampling, and sampling and analysis quality assurance (QA).

- Section 4, ICDF Complex Operations, presents detailed descriptions of operations at the facility including waste tracking, CERCLA remediation site activities, waste shipment and delivery, ICDF Complex access, seasonal winterization/startup, decontamination and treatment operations, evaporation pond management, leachate management, decontamination, treatment, waste staging, startup testing, and waste management.

- Section 5, Waste Unit Designation and Operational Approach, presents the waste management, unit designation, standards, and operational requirements for waste treatment, staging, and storage areas.

- Section 6, Equipment Maintenance, presents discussions addressing grounds and perimeter maintenance, equipment maintenance, facility maintenance, and spare parts and special tools.

- Section 7, Facility Configuration Control, presents discussions addressing the management of drawings, procedures, modifications, and records for the ICDF Complex.

- Section 8, Inspections, presents discussions addressing the various inspections, including ICDF Complex, landfill, evaporation pond, decontamination building (with treatment area), waste storage, and tank inspections.

- Section 9, Notification and Submittals, presents notification requirements for spills and releases, sampling event notifications and data submittals, operational reports, and emergency response and alarm condition notification and reporting.

- Section 10, Records Management, presents discussions addressing the records management requirements for the ICDF Complex.

- Section 11, References, provides a list of references for the O&M Plan.

The following are appendixes to this document:

- Appendix A, Procedure Overviews, provides a summary of the requirements for ICDF Complex operations. Each procedure overview is numbered to align with the corresponding section of the O&M Plan. The procedure overviews will be used to develop detailed operating procedures for the ICDF Complex.

- Appendix B, Equipment List, provides a tabulation of the equipment used for ICDF Complex operations. The equipment is categorized by whether it is considered permanent or temporary.

1.2 ICDF Complex Components Description

The major components of the ICDF Complex include the landfill disposal cell, an evaporation pond with two cells, administration building, weigh scale, and decontamination building with treatment systems. Figure 1-2 presents the ICDF Complex layout. (Additional information is available in the *Remedial Design/Construction Work Plan for Waste Area Group 3 Staging, Storage, Sizing, and Treatment Facility* [DOE-ID 2002b] and the *ICDF Remedial Design/Construction Work Plan* [DOE-ID 2002a].)

The ICDF landfill disposal cells are designed primarily for soils and other solid wastes, whereas the ICDF evaporation pond is designed for aqueous wastes. The ICDF Complex will provide centralized receiving, staging, storage, packaging, and treatment operations for waste from various INL CERCLA remediation/removal and investigation sites prior to the waste's disposal in the ICDF landfill or evaporation pond, or shipment off-Site.

All ICDF Complex activities take place within the WAG 3 AOC to allow flexibility in managing WAG 3 waste consolidation and remediation without triggering LDRs and/or other RCRA requirements, in accordance with the OU 3-13 ROD. The ICDF landfill and evaporation pond will accept only low-level waste (LLW), mixed low-level waste (MLLW), hazardous waste, and limited quantities of TSCA waste types (PCB waste and asbestos) for disposal. Definitions of LLW, MLLW, hazardous waste, and TSCA wastes are provided in Table 3-1 of the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2003a). Other wastes not meeting the ICDF landfill WAC specified in Section 5 of the ICDF Complex WAC may be received, stored, treated, or packaged at the ICDF Complex prior to their shipment to an off-Site disposal facility (as discussed in detail in Section 4).

The majority of waste destined for disposal at the ICDF Complex is contaminated soil. However, debris, aqueous waste, investigation-derived waste (IDW), which includes waste generated by CERCLA investigations (e.g., drill cuttings, purge water, soils, and debris), and PCB waste and asbestos also will be included in the waste inventory. ICDF Complex leachate, decontamination water, treatment system washdown water, water from CERCLA well purging, sampling, and development activities, and other WAG 3 AOC liquid wastes that meet the ICDF evaporation pond WAC specified in Section 6 of the ICDF Complex WAC (DOE-ID 2005a) will be disposed in the ICDF evaporation pond. In addition, secondary wastes generated from operations and maintenance activities, such as waste from decontamination activities, personal protective equipment (PPE), used equipment, filters, and other similar waste, will be disposed in the ICDF landfill or evaporation pond as appropriate. More detail on waste types is provided in *ICDF Complex Operations Waste Management Plan* (DOE-ID 2003a).

At the end of the ICDF Complex's operational life, its facilities will be decontaminated and decommissioned and all contaminated equipment disposed in the ICDF landfill. After this process, the remaining buildings and equipment will be removed or used for future projects.

1.2.1 Administrative Facilities

The administrative facilities include a scale and an administration ("admin") trailer with an office area, a public use area, restrooms, and utility rooms to support activities involving waste receipt, paperwork (electronic or hardcopy format) verification, and determination of the immediate destination of waste shipments. Access into the Complex for visitors and ICDF Complex personnel is gained through the main entrance gate as shown on Figure 1-2. The administrative functions include the following:

- Weighing and verifying waste coming into or out of the ICDF Complex
- Determining waste disposition/destinations
- Administering treatment verification and other quality activities
- Processing and maintaining required records associated with the waste disposition
- Performing overall management functions.

The scale is located adjacent to the admin trailer and will be used to weigh waste transport vehicles entering and leaving the ICDF Complex. (Section 1.2.1.1 contains more information regarding the scale and its functions.)

Waste receipt and paperwork (electronic or hardcopy format) verification will be completed in accordance with the requirements of the appropriate WAC. Information from incoming waste shipments will be entered into the waste tracking system by close of business the next working day. Entries into the waste tracking system will include information such as the shipment's weight and waste verification (a review of the waste to verify that it matches the waste identified on the accompanying paperwork by confirming the waste description, the number and type of containers in the shipment, etc.). The determinations of immediate destinations will identify a specific disposal or storage location for the waste. Destinations include disposal in the landfill or the evaporation pond, staging for treatment in preparation for disposal in the ICDF landfill or evaporation pond, or staging and/or storage prior to shipment for off-Site disposal as necessary.

The admin trailer also will continue to be the location of the operations planning meetings, ongoing facility and operations training, and where electronic information is accessed. All waste data will be backed up on a real-time basis on a remote server to prevent loss of records in case of fire or other catastrophic events at the ICDF Complex.

1.2.1.1 Scale. The scale is located immediately south of the admin trailer. All waste shipments coming into the ICDF Complex are weighed and documented at this location. Tare weights of roll-on/roll-off containers will be initially obtained, and tare weights of other haul vehicles may be obtained, if necessary, when the vehicles leave the ICDF Complex. The weigh data are automatically recorded electronically into the waste database in the admin trailer. The scale has a capacity of 60 tons, accuracy within 0.1% at full scale, and it is expected to accommodate standard commercial tractor-trailer units.

1.2.1.2 ICDF Complex Waste Tracking System.

A waste tracking system is necessary to process waste through the ICDF Complex and to a final destination. This tracking system offers multiple functions. It permits the waste-generating site personnel to submit a request to send waste to the ICDF. As part of this request, the generating site personnel submit the Material Profile. From the Material Profile, a determination is made as to whether the waste meets the WAC for the ICDF Complex. If the waste meets the WAC, the waste units are assigned an Integrated Waste Tracking System (IWTS) tracking number, in the form of a barcode and unique number, that is printed for tracking and disposition processes. The unique number follows the waste unit through the ICDF Complex and into the landfill, evaporation pond, storage/staging, or off-Site disposal.

Waste may be sent directly to the landfill or evaporation pond, moved through the stabilization process, or sent off-Site. Entries are made in a log to record the movement of waste through the ICDF Complex. Entries may be either in an electronic or hardcopy log. Finally, location coordinates of the waste in the landfill are entered into the ICDF Complex database. (Plan [PLN] -914 of the ICDF Complex RAWP provides further detail regarding the waste tracking system.)

1.2.2 Decontamination Building

The decontamination (decon) building is an engineered metal building, located near the landfill entrance. It provides an equipment decontamination area and an area for the treatment, if necessary, for small volumes of waste prior to disposal in the landfill. Figure 1-3 shows the building floor plan of this facility. The building is qualified under the Uniform Building Code (UBC) Type IIN construction, which stipulates noncombustible materials. The decon building has been designed to meet the substantive requirements of 40 *Code of Federal Regulations* (CFR) 264.1101(b); design details are provided in the SSSTF Remedial Design/Construction Work Plan (RD/CWP) (DOE-ID 2002b).

Decontamination will be available for waste transport vehicles, waste containers, and other tools and equipment as required. Before leaving the ICDF Complex, equipment and trucks will be surveyed to meet free-release criteria for radiological contamination. Any equipment that has not been decontaminated and is no longer in use is stored on a contaminated equipment pad to be constructed adjacent to the decon building. (Section 1.2.3 describes the pad in more detail.)

Dry decontamination of equipment is the preferred method; however, in circumstances where dry decontamination is not effective in removing the radiological contamination, wet decontamination methods will be used. Dry decontamination will be accomplished by scraping or brushing visually dirty areas with dedicated hand tools. After the contamination is removed from the equipment, the debris will be collected and returned to the landfill for disposal. Any secondary wastes generated will be managed using the *ICDF Complex Operations Waste Management Plan* (DOE-ID 2003a).

Wet decontamination will be accomplished using high-pressure water sprayers and manual methods as required. After decontamination, containers/equipment will be surveyed and returned to normal use, or stored at the empty container area until they are required for use. Secondary wastes, such as sludge from the oil/water separator, will be disposed of in the ICDF landfill.

The decontamination washwater resulting from these activities will drain to a sump located adjacent to the decon building, progress through an oil/water separator, and be pumped directly to the evaporation pond. Sections 1.2.3.1, 1.2.3.2, and 1.2.4 provide additional detail on these processes.

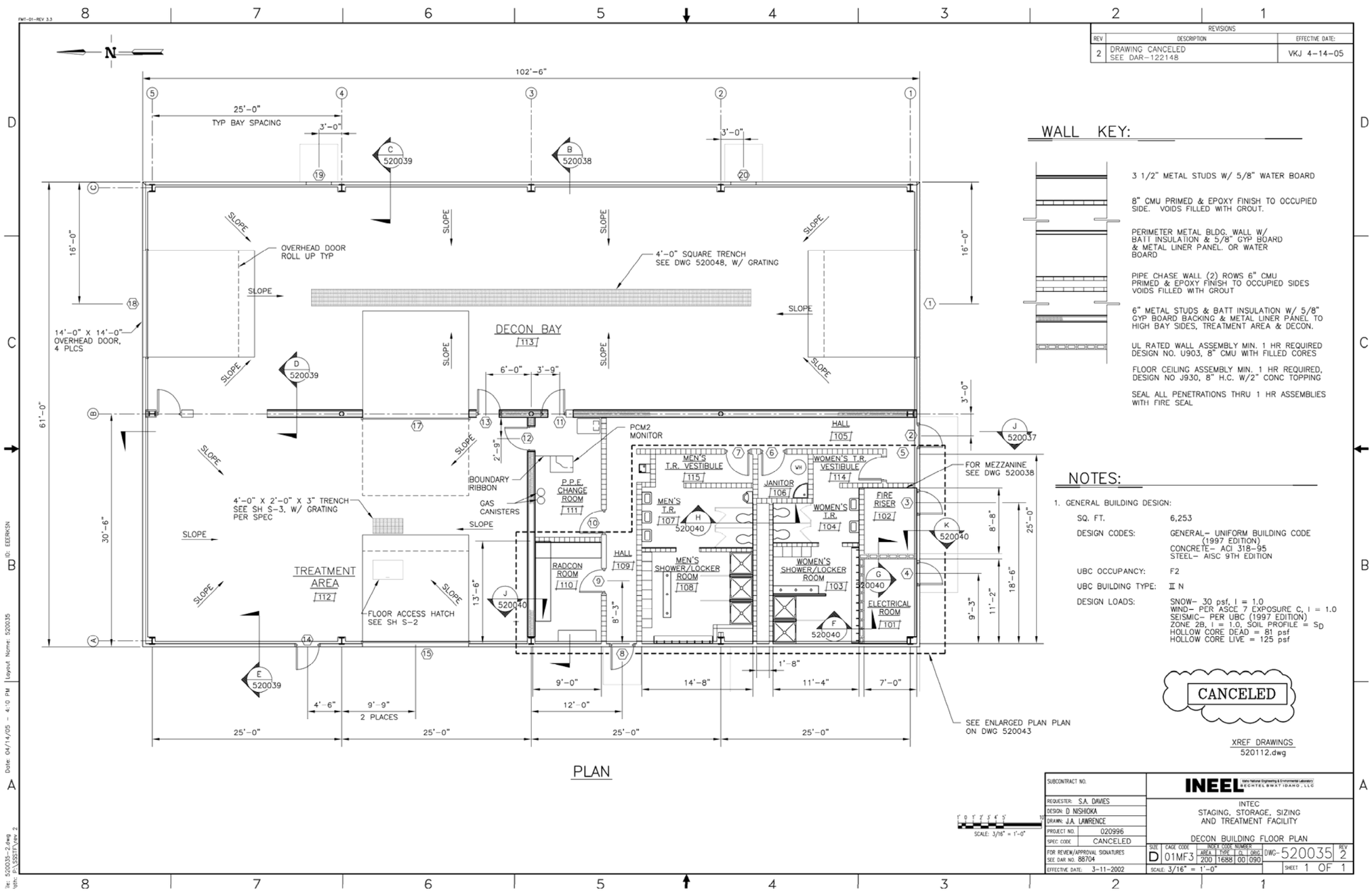

Figure 1-3. Decontamination building floor plan.

Waste requiring treatment prior to disposal will be delivered to the treatment area in the decon building or placed in a staging area until the next treatment campaign. Nondebris waste will be transferred into a mixing system where appropriate treatment blends such as cement, water, or other reagents will be added. After blending is complete, the mix will be transferred into a waste container, sampled, and staged for disposal. Treated waste that meets the ICDF landfill WAC will be disposed in the landfill. Debris will be treated by microencapsulation with Portland cement and additives as necessary to meet ICDF landfill WAC requirements. The treatment room will have a floor trench that connects to the decontamination area drain system for containment of spills and wash water. The treatment room and equipment also will include a high-efficiency particulate air (HEPA) filtered dust control ventilation system for worker protection and collection of airborne dust generated during soil treatment operations.

1.2.3 Contaminated Equipment Pad

The contaminated equipment pad, located west of and adjacent to the decon building, is a 6-in.-thick concrete slab, post-tensioned with high-strength cables to attenuate shrinkage and cracking. Additionally, the slab is coated with a waterproof seal. Curbs are placed around the pad, which will be sloped to drain into a trench drain that collects and transports drainage to the pump station near the decon building. Section 1.2.4 provides additional detail on the pump station.

The contaminated equipment pad may be used for staging and storing contaminated equipment that is no longer in use. In addition to its equipment staging function, this pad is designed to temporarily store approximately 25,000 gal of spent fire water from a release inside the decon building for contamination control. Spent fire water will be transferred to the evaporation pond for disposal.

1.2.3.1 Drainage of Contaminated Water. Drain water and storm water on the contaminated equipment pad are collected in a trench drain. The drainage is directed into the decon building, through the concrete P-trap, to collect drainage from the decontamination and treatment rooms. The drain water flows from the 6-in. pipe through an oil/water separator, then into a pump station. The drain water is then pumped through a pipe from the pump station to the evaporation pond for disposal. Additional discussion regarding cleanout of these components can be found in Overview 1.2.3.1 in Appendix A of this document.

1.2.3.2 Oil/Water Separator. All drain water from the contaminated equipment pad and the decon building discharges into an oil/water separator. The oil/water separator allows the collection of petroleum products and soil particles to settle out. The oil/water separator is designed to provide a water block to separate the outside air from the air inside the decon building (similar to the concrete P-trap). A separate vent will be provided from the oil/water separator to the surface for ventilation. The piping from the drain trenches in the building and storage pad also is designed so that the bulk of sedimentation is collected in the trenches and removed from there. Additional information regarding the cleanout of the oil/water separator can be found in Overview 1.2.3.2 in Appendix A of this document.

1.2.4 Pump Station

The pump station is used to pump contaminated water from the decon building to the evaporation pond. It is designed with an inner 4-ft-diameter high-density polyethylene (HDPE) shell with two submersible grinder pumps configured to operate alternately or together for a surge of drainage water from the contaminated equipment pad. The two pumps provide redundancy and extend the life of both pumps. Slide rails are placed inside the shell where the pumps can be removed from the outside surface and maintenance personnel do not have to enter the pump station. The pump station discharge piping may be disconnected at ground level so that personnel do not have to enter the sump for maintenance activities.

The pump station shell is placed inside a 6-ft-diameter concrete vault to be used as the secondary containment system. Any leakage inside the building or collection piping will drain into this vault, where detectors monitor the leakage. In the event of leakage, corrective action can be taken to drain the leakage from the concrete vault.

1.2.5 Staging and Storage Areas

Within the ICDF Complex, there are five staging or storage areas, an empty container staging area, and a truck in-transport area. Each of these areas is listed below with a brief description of its purpose. (Locations are shown on Figure 1-2.) More detail about the regulatory designation, design, and operation of these areas is provided in Section 5 and Appendix A of this O&M Plan.

- Full container staging area (70 ft × 190 ft, capacity approximately 4,000 yd^3) – Containerized waste waiting for treatment or the toxicity characteristic leaching procedure (TCLP) or other analytical results and containerized waste staged as a result of processing delays will be located in this area.

- Bulk soil stockpile staging area (130 ft × 135 ft, capacity 3,250 yd^3, modular operations concept will accommodate 2,400 to 3,000 yd^3) – This area is allocated for contaminated soil stockpile that is awaiting treatment by the treatment unit in the decon building or other bulk soil wastes that require staging. Overview 5.1 in Appendix A of this O&M Plan provides additional details regarding the design and operating requirements of the bulk soil stockpile staging area.

- Tank and container storage area (60 ft × 150 ft, capacity 56,000 gal) – The tank and container storage area is where aqueous waste in tanks and containerized wastes will be stored prior to treatment, held for off-Site disposal, or stored prior to discharge to the evaporation pond. The tank and container storage area will be the location of a storage container (20 ft × 50 ft, capacity 5,000 ft^3) designated for PCB storage.

Other areas are set aside to facilitate ICDF Complex operations include the following:

- Empty container staging area (100 ft × 300 ft) – This area may hold clean, empty containers such as roll-offs, waste boxes, etc.

- Truck in-transport area (100 ft × 100 ft) – The purpose of this area is to allow for truck parking until resolution of waste acceptance with the ICDF Complex user. Should conditions arise that prevent the off-loading or transportation of containers, the vehicle may be parked inside this area.

1.2.6 Waste Treatment

As noted in Section 1.2.2, the decon building provides treatment capabilities to treat INL CERCLA wastes and secondary waste streams generated during ICDF Complex operations. Waste stabilization or treatment may be necessary for solid, aqueous liquid, or sludge. The purpose of treatment is to prepare INL CERCLA waste that does not meet the ICDF landfill WAC for final disposal in the ICDF landfill or at an off-Site disposal facility. The object of stabilization is to produce a treated waste that will (1) reduce the heavy metal leachability to LDR/universal treatment standard (UTS) concentrations to meet the ICDF landfill WAC and (2) exhibit no free liquid. Aqueous wastes that do not meet the evaporation pond WAC (e.g., petroleum-contaminated media from the oil/water separator) may be used for stabilization of soils, or held until appropriate on-Site or off-Site treatment, storage, or disposal is arranged. The main components of the stabilization process are the vertical lift tipper (used to lift waste containers and dump them into the treatment unit), a mixer unit, a bulk-bag unloader (for unloading reagent into the mixer unit), container for collecting the treated waste from the mixer, and an air filtration system with

baghouse/HEPA filter to collect particulate from the air. A schematic showing the main components of the process and a brief description and function of each process component is provided in Section 4 of this O&M Plan. Further details about the process operation can be found in Appendix A of this O&M Plan.

Treatment of hazardous debris, subject to "Treatment Standards for Hazardous Debris," (40 CFR 268.45) also will be performed at the decon building using Portland cement-based microencapsulation for debris wastes that require treatment prior to disposal. Microencapsulation encases the hazardous debris in inorganic materials (Portland cement concrete) to substantially reduce the surface exposure to potential leaching media. The components to the debris treatment process are the grout hopper/reservoir, positive displacement pump, hose, and box brace. Debris treatment equipment is portable and will be used in either the treatment area or decon bay of the decon building. For more details about the debris treatment process, see Section 4 and Appendix A of this O&M Plan.

Waste sizing will be conducted at the CERCLA remediation site to meet the ICDF Complex WAC, as described in the combined WAC (landfill, pond, and SSSTF) document (DOE-ID 2005a).

Additional information related to waste treatment of soils is provided in Engineering Design File EDF-ER-296, "Process and Treatment Overview for the Minimum Treatment Process." EDF-1730, "Staging, Storage, Sizing, and Treatment Facility (SSSTF) Debris Treatment Process Selection and Design," addresses the methods for selecting a debris treatment technology.

1.2.7 Landfill Cells

During the initial operating period, the landfill consisted of Cell 1 (approximately 850 ft × 400 ft). As Cell 1 was filled, the landfill was expanded with an adjoining second cell constructed to the south. Cells 1 and 2 share common exterior berms and both the liner and the leachate collection system of Cell 1 is extended into the new cell. Figure 1-4 shows the layout of the landfill with build-out of the two cells.

The landfill was constructed with a multilayered liner and sump system to facilitate drainage and prevent leakage. The side slope liner is the same, with the exception of the substitution of a primary geocomposite drainage layer above the primary geomembrane in place of the gravel drainage layer. The bottom lining system consists of the following components, from top to bottom:

- A 3-ft-thick operations layer
- 12-in. gravel drainage layer
- A geotextile cushion (12-oz nonwoven filter fabric)
- A 60-mil textured primary HDPE geomembrane
- An internally reinforced geosynthetic clay layer (GCL)
- A leak detection drainage layer geocomposite – Leak Detection and Recovery System (LDRS)
- A 60-mil textured secondary HDPE geomembrane
- A 3-ft-thick low-permeability compacted soil bentonite (CSB) liner.

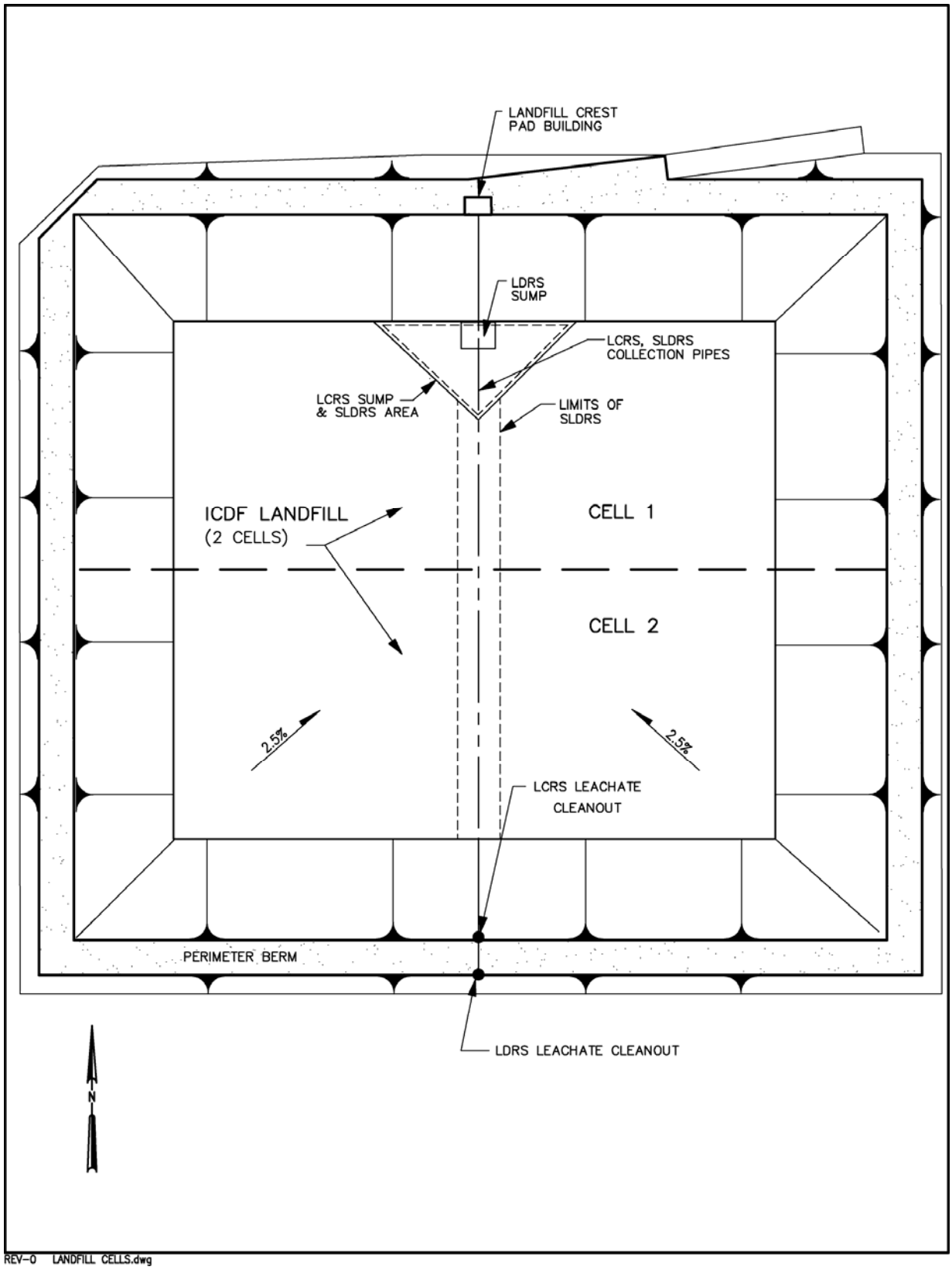

Figure 1-4. ICDF landfill cells layout.

Beneath the bottom liner system along the centerline of the landfill and leachate collection sump area is a Secondary Leak Detection Recovery System (SLDRS). This system is comprised of, from top to bottom, a separation geotextile, operations layer drainage gravel, SLDRS collection pipe, cushion geotextile, and a 60-mil textured HDPE geomembrane. In some areas of the SLDRS, a drainage composite substitutes for the separation geotextile, gravel, and collection pipe. The system drawings (DOE-ID 2002b) and Technical Specifications (SPC-1476) offer complete construction details of the liner and sump areas.

1.2.7.1 Leachate Collection Recovery System. The Leachate Collection Recovery System (LCRS) consists of the in-cell drainage/sumps, collection piping, and the evaporation pond. The purpose of the LCRS is to collect the primary, secondary, and tertiary leachate and allow for disposition of the leachate collected. Any precipitation that falls within the lined area, including precipitation that falls and collects over the surface of disposal areas, will be collected and treated as leachate. The LCRS contains high-flow and low-flow leachate pumps and access for collection pipe clean-outs.

1.2.8 Evaporation Pond

The evaporation pond has a 4.4M-gal capacity with two cells that accept aqueous wastes, such as leachate and other liquid waste sources from WAG 3 or incidentals from ICDF Complex operations. The water associated with the wastes will evaporate, leaving behind the solid materials. In the unlikely event the ponds cannot receive liquid wastes (e.g., downtime for maintenance activities or capacity reasons), liquid wastes could be removed through the truck loading and unloading station.

The construction of the evaporation pond includes a liner system to prevent infiltration into the surrounding soil. The liner consists of the following layers, from top to bottom:

- Two 60-mil HDPE geomembrane layers (sacrificial and primary). The sacrificial layer is textured HDPE while the primary is smooth.
- An internally reinforced primary GCL layer.
- A 3-ft sand/gravel drainage layer to serve a dual purpose as leak detection drain layer and freeze/thaw protection for the underlying GCL. On the bottom of the ponds, the 3-ft-thick drainage layer will consist of a minimum 1 ft of material with hydraulic conductivity greater than 0.1 cm/sec. A drainage layer geocomposite is used on the side slopes, similar to the landfill.
- A geotextile cushion (12-oz nonwoven filter fabric, bottom of ponds only).
- A 60-mil textured secondary HDPE geomembrane layer.
- An internally reinforced secondary GCL layer.
- A 1-ft-thick base soil layer consisting of natural silt and clay.

Figure 1-5 depicts the pond cell layout.

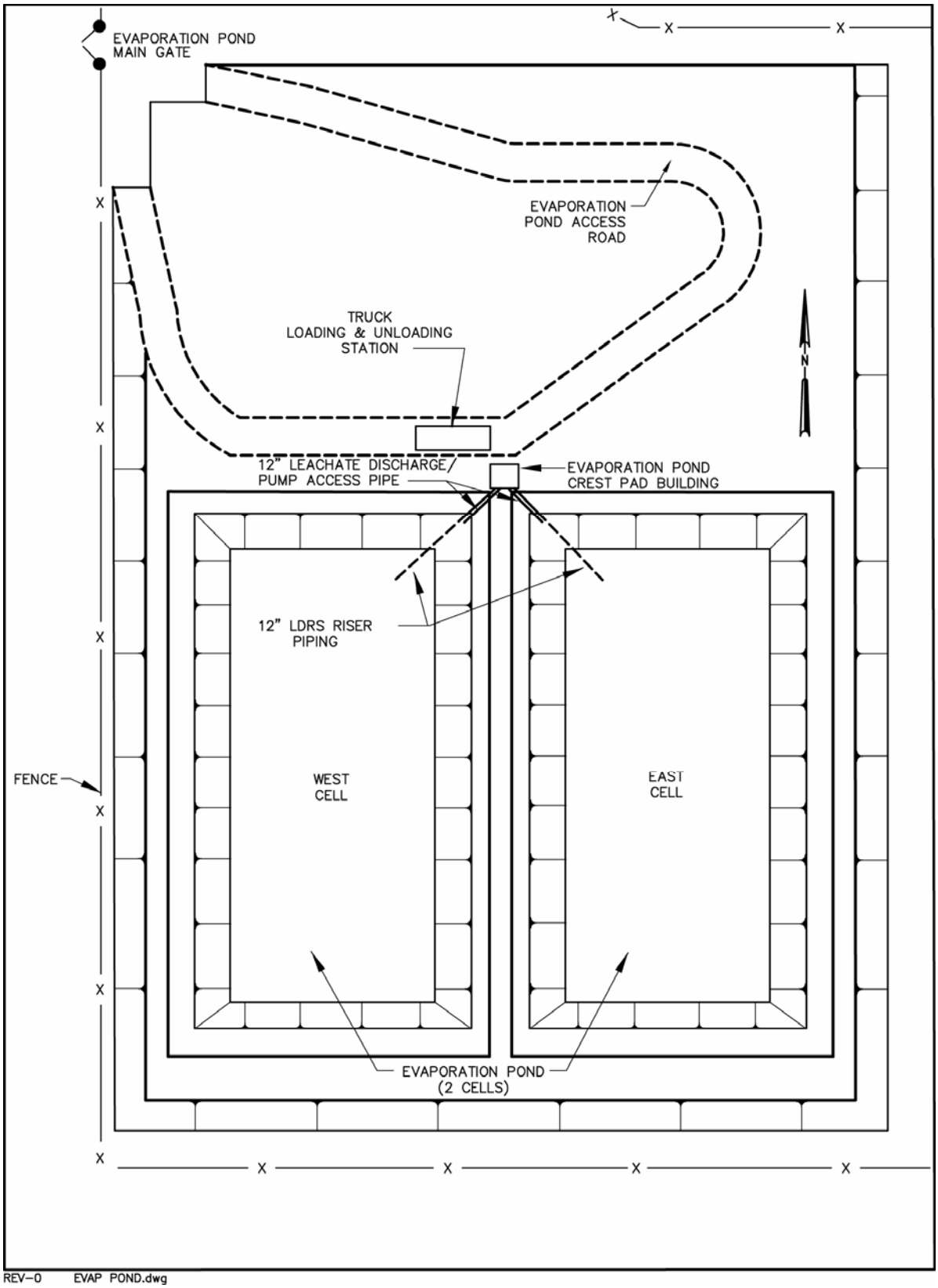

Figure 1-5. ICDF evaporation pond cell layout and component location.

1.2.9 Crest Pad Buildings

The ICDF landfill and evaporation pond crest pad buildings serve as valve control and monitoring stations for the leachate handling systems. Two crest pad buildings are included for the facility, one at the top of the north berm at the ICDF landfill and one on the north side of the evaporation ponds. Each crest pad building houses the motor control centers for the leachate handling and transfer pumps and contains the programmable logic control centers for operation of pumps and monitoring of flows, leachate levels, and pumps. The crest pad building floor slabs are designed as containment sumps for facilitation of leachate system operation and maintenance. Figure 1-6 provides a general overview of the foundation layout and elevation views of the crest pad buildings, which were developed from the construction drawings P-205 and P-206 of the crest pad buildings (DOE-ID 2002a). Adjacent to the evaporation pond crest pad will be a truck loading/unloading station for off-loading liquid waste hauled by tanker truck or for removal of excess liquid volume from the cells. Figure 1-7 depicts the truck loading and unloading station.

1.2.10 Groundwater Monitoring System

A groundwater detection monitoring system was installed in the Snake River Plain Aquifer (SRPA) to comply with substantive applicable or relevant and appropriate requirements of 40 CFR 264, Subpart F, of the RCRA, identified in Table 12-3 of the OU 3-13 ROD (DOE-ID 1999). Four rounds of water samples have been collected from the SRPA and perched water to establish background water quality. Five new downgradient aquifer monitoring wells and one existing upgradient well will be used for the SRPA detection monitoring. Further details on groundwater monitoring are provided in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004). Perched water, when present, will be monitored for water quality.

1.3 Operational Overview

The subsections below describe the general processes and steps required to move waste from a waste generating site, through the operations and systems of the ICDF Complex, and into the ICDF landfill or evaporation pond for disposal. It should be noted that the steps presented in the accompanying flowcharts for these processes are based on the assumption that all waste characterization and Material Profile approvals satisfy the appropriate receiving unit WAC within the ICDF (DOE-ID 2005a).

1.3.1 Process for Waste Destined for the ICDF Landfill

The process for waste destined for the ICDF landfill is shown in the flowchart presented in Figure 1-8. This flow chart includes a basic overview of the waste process after it arrives at the ICDF landfill. The general waste process described is applicable for wastes arriving in any form, whether by truck or contained in roll-offs, waste boxes, or other waste forms (monoliths, for example). Verification sampling will be conducted in accordance with the *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2005c). The information below provides a brief description of each of the steps for waste disposal operations. Note these processes have been established to facilitate clean operations as discussed in more detail in Section 4.

1. CERCLA-generated wastes from INL will be transported to the ICDF Complex. The disposal of wastes will be based on compliance with the applicable ICDF WAC for each specific type of waste. The waste generator contractors at each specific CERCLA site prior to shipment will be responsible for excavating the wastes, obtaining radiological control technician (RCT) release prior to transport, and transporting the waste to the ICDF Complex.

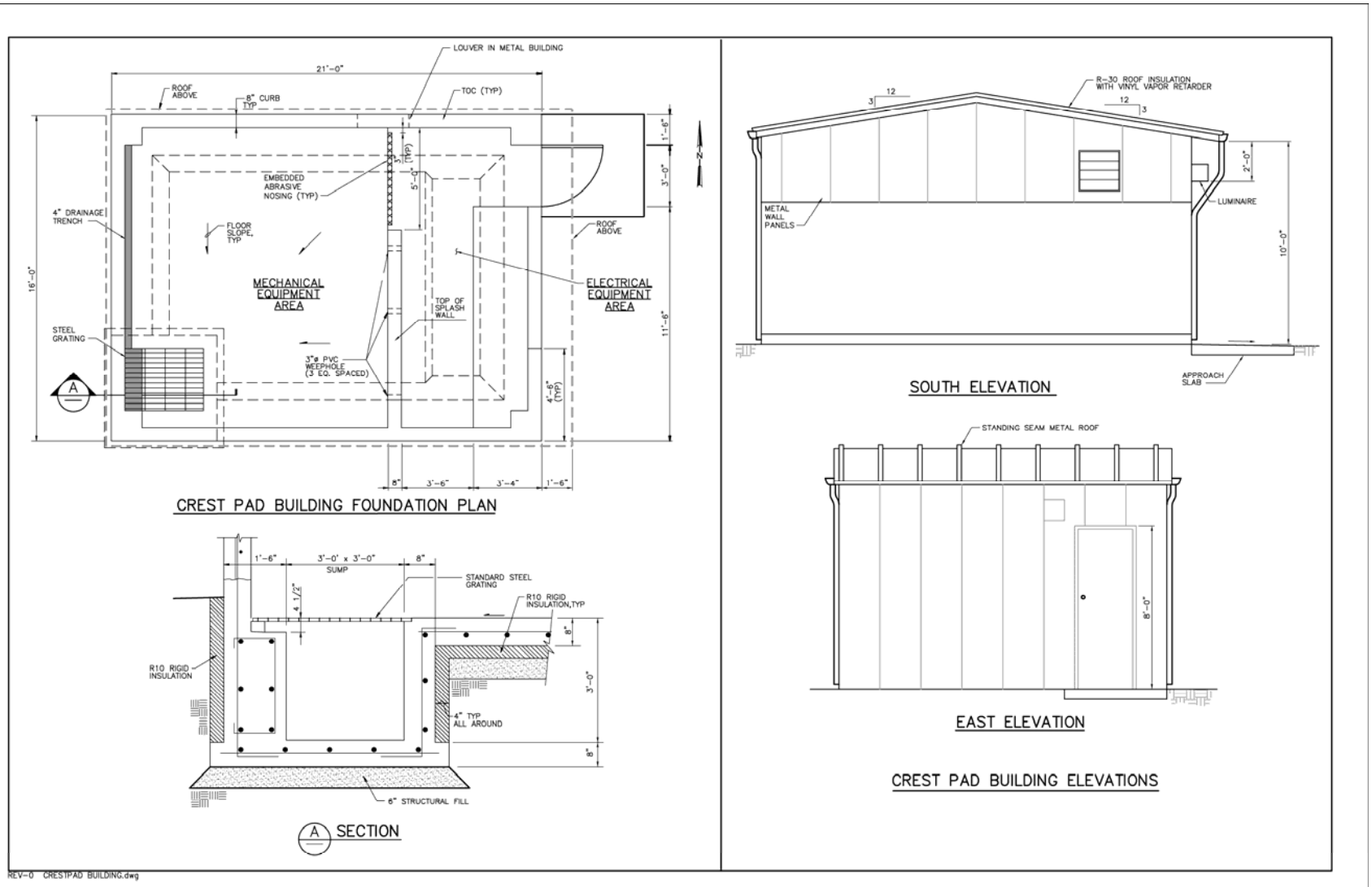

Figure 1-6. Crest pad building foundation elevation views.

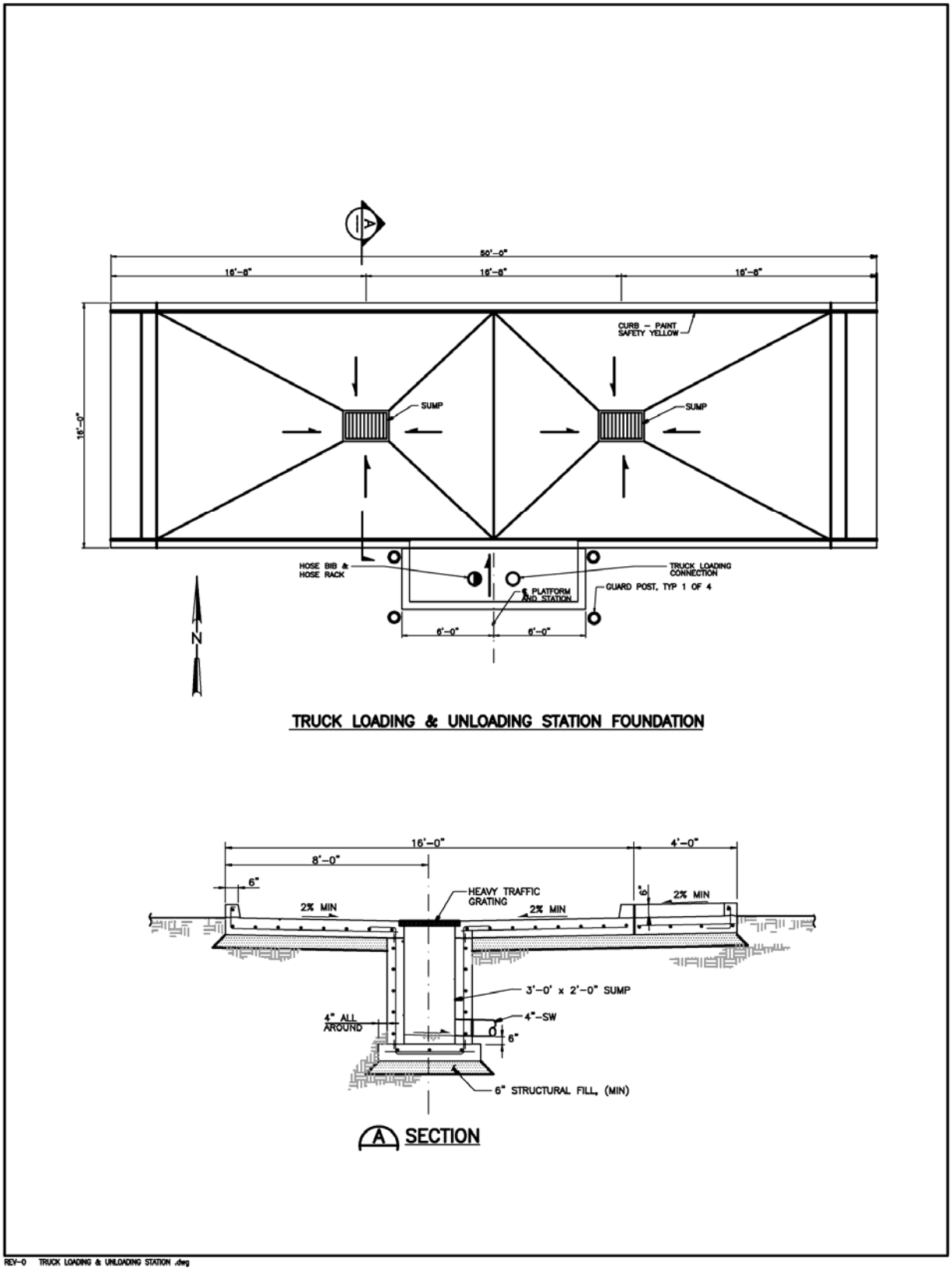

Figure 1-7. Truck loading and unloading station layout.

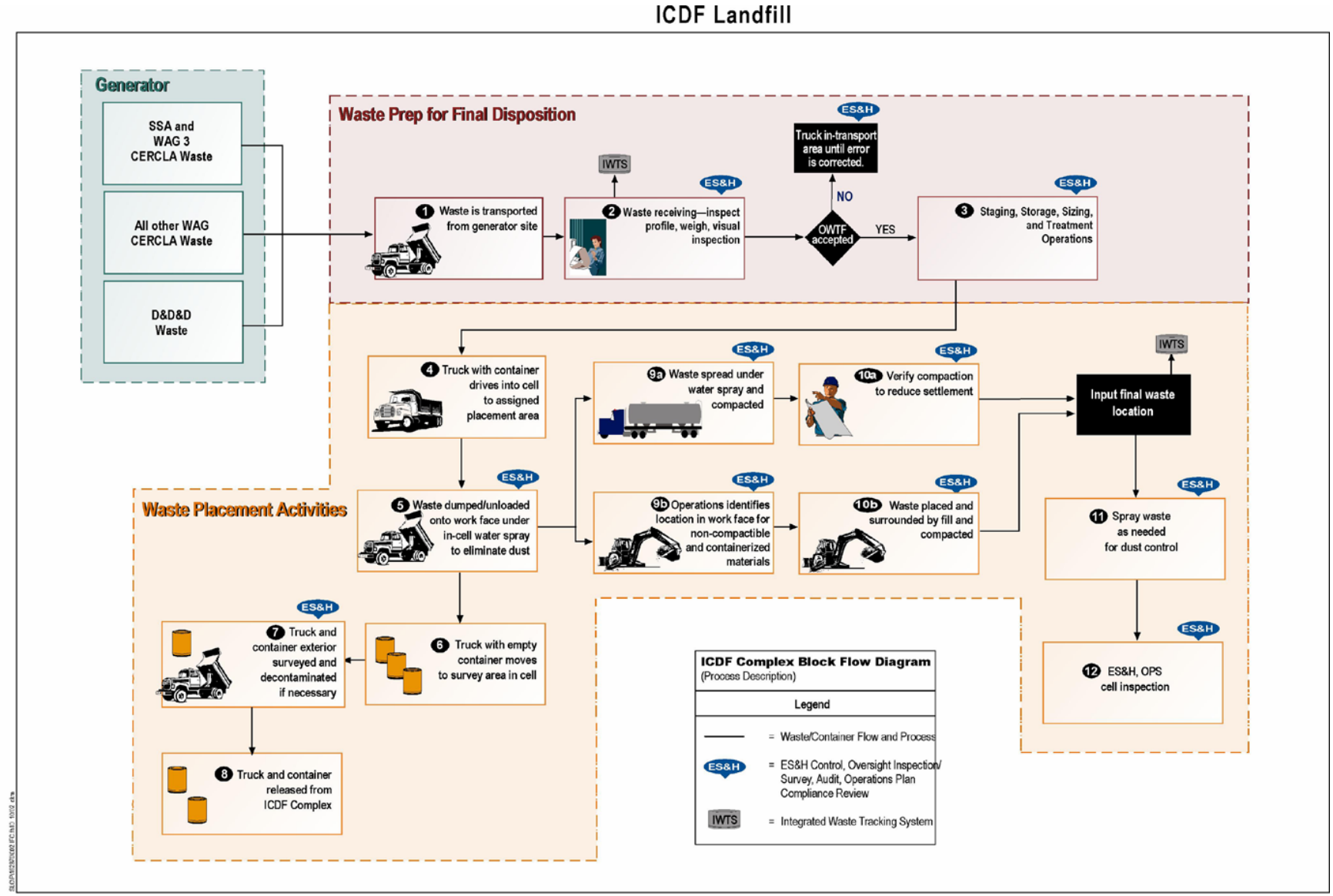

Figure 1-8. Process of waste destined for ICDF landfill.

2. Waste enters the facility through the gates at the ICDF Complex. Gates and access will be controlled by ICDF Complex personnel to ensure that unauthorized access is not allowed.

3. When the waste load arrives at the ICDF Complex, personnel will verify that the shipment is scheduled for receipt before accepting the waste. If the On-Site Waste Tracking Form (OWTF) is not approved for disposal of the waste, it will be sent to the truck in-transport area until the issue is corrected. If the discrepancy cannot be corrected within 10 working days, the waste will be returned to the generator, assuming the shipment back to the generator would not violate Department of Transportation (DOT) regulations. The return of the waste to the generator will require the generating site to have the capability to accept these returned wastes. The waste in the truck in-transport area may be moved into ICDF Complex staging or storage areas, as long as the waste meets the criteria for these areas. Waste will be weighed and appropriately staged, stored, and treated as applicable for ultimate disposal. Note that all waste sizing will be conducted at the CERCLA remediation site to meet the ICDF Complex WAC.

4. If the waste is approved for disposal, the truck will be directed to the assigned disposal location within the landfill cell. Containerized waste can be staged and transported to the landfill by ICDF Complex equipment.

5. The waste will then be unloaded at the work face. Water will be used, if necessary, to minimize dust generation.

6. When the truck has finished unloading waste, it will be moved forward away from the active face of the landfill to a survey area for a preliminary radiological survey.

7. The outside of the truck (gate area, rear tires, and rear truck frame) and empty waste container will be more thoroughly surveyed by an RCT once out of the landfill to meet free-release criteria for radiological contamination (to be released from the ICDF Complex). Contamination above the release criteria on the truck or container will be removed by brushing, scraping, or other dry decontamination methods if possible. Wet decontamination methods (such as water spray steam cleaning) may be necessary under certain circumstances (such as specific health and safety protocols) and may require special equipment to perform.

8. After passing the free-release criteria for radiological contamination performed by the RCT, the truck and/or empty waste container will be released from the ICDF Complex or placed in the empty container storage area. In circumstances where the tare weight of the truck and/or the container have not been documented, the truck and container will be weighed when leaving the facility or before drop-off at the empty container storage area.

9a. The loose soil waste will be spread approximately 1 ft thick within the active waste tracking grid(s) and compacted. Additional water will be added as necessary to aid compaction and reduce voids.

9b. A location will be identified at the working face for placement of debris such as containers, drums, etc. Debris will be placed and surrounded by compacted soil wastes. Depending on the type of debris, recommendations from the “ICDF Waste Placement Plan” (EDF-ER-286) will be followed to ensure adequate compaction of soil waste around the debris.

10a. Compaction of the soil wastes will be verified by use of a nuclear density field gauge, Humbolt GeoGauge[a], or equivalent at a prescribed fill yardage frequency. See Section 4 and Appendix A of this O&M Plan for further details.

10b. Compaction of the soil wastes surrounding the noncompactable and containerized materials will be verified by the use of a nuclear density field gauge, Humbolt GeoGauge, or equivalent. See Section 4 and Appendix A of this plan for further details.

11. Control materials and application of water will be used to limit airborne emissions. If necessary, fixatives or temporary covers may be used.

12. Weekly inspections and inspections after storms are required by 40 CFR 264.303 (b) for the landfill. Inspections following a storm or other event will be conducted within 24 hours following the storm.

1.3.2 Process for Waste Destined for ICDF Evaporation Pond

The process for waste destined for the ICDF evaporation pond is shown in the flow chart presented in Figure 1-9. This flow chart includes a basic overview of the waste process before it arrives at the ICDF evaporation pond. The listed information below provides a brief description of each of the steps for waste disposal operations.

1. Approved WAG 3 CERCLA liquid waste will be transported from other WAG 3 sites. Approved wastes identified in the ICDF Complex WAC (DOE-ID 2005a) for the evaporation pond include the following:

    a. Aqueous wastes generated in the ICDF Complex and from WAG 3 CERCLA investigative, remedial, and removal activities, including purge water and development water from monitoring wells

    b. Secondary aqueous wastes from waste processing and decontamination activities associated with the ICDF Complex operations.

2. When waste arrives at the ICDF Complex, personnel will verify that the shipment is acceptable for receipt.

    a. For wastes other than leachate from the ICDF landfill, the specific evaporation pond cell that receives the waste will be recorded on the Material Profile.

    b. If the OWTF is not approved, it will be sent to the truck in-transport area until the issue is corrected. If the discrepancy cannot be corrected within 10 working days, the waste will be returned to the generator, assuming the shipment back to the generator would not violate

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a. The Humbolt GeoGauge may only be used after Agency approval of the test demonstration.

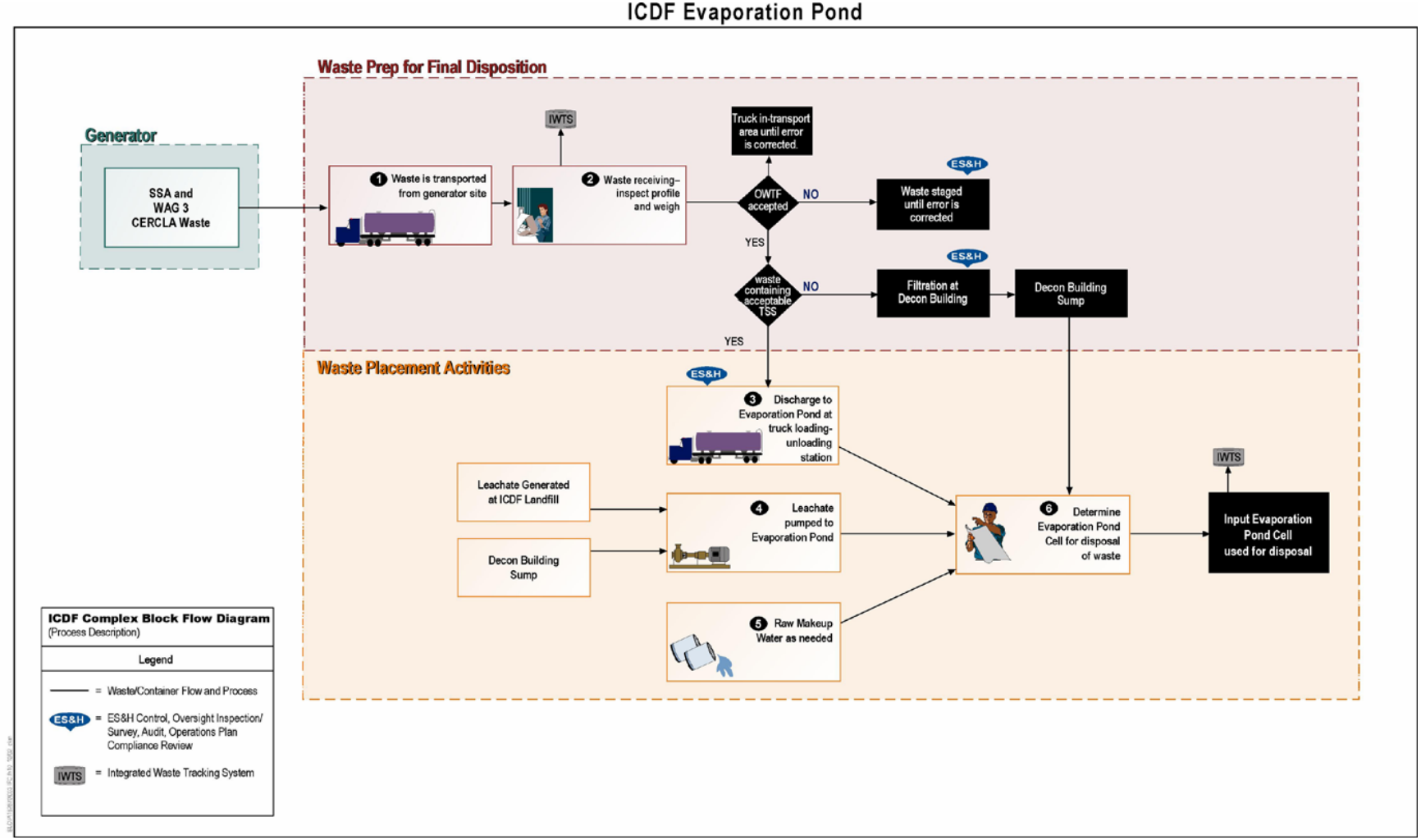


Figure 1-9. Process of waste destined for ICDF evaporation pond.

DOT regulations. The return of the waste to the generator will require the generating site to have the capability to accept these returned wastes. The waste in the truck in-transport area may be moved into ICDF Complex staging or storage areas, as long as the waste meets the criteria for these areas.

c. Liquid wastes received at the ICDF Complex will be either measured in gallons or weighed and the volume calculated.

3. For wastes disposed at the evaporation pond truck loading and unloading station, the waste will be pumped to the evaporation pond through the evaporation pond crest pad building.

4. The leachate from the ICDF landfill sump will be pumped to the evaporation pond. The leachate will gravity-drain to the leachate collection sumps where the levels will be monitored. A high-flow pump and low-flow pump are installed in the landfill LCRS sump to handle the expected range of leachate during the life of the landfill. The evaporation pond crest pad building will include flow meters and control panels for operation and recording of critical data. Decontamination and washdown water from the decon building also will be pumped to the evaporation pond through the evaporation pond crest pad building.

5. Raw water makeup capabilities will be provided from the INL raw water system to keep the liquid level of the evaporation pond above any potential sediment. The sediment will be kept under water to prevent any potential migration due to drying out and dust generation. Sediment that accumulates in the evaporation pond may be sprayed to move the sediment to the low point collection area. This will minimize the area of sediment distribution and will also minimize the addition of raw makeup water.

6. The decision will be made by the operations personnel as to which cell of the evaporation pond will be active at any one time. The influent piping has the capability to split flows into either cell of the evaporation pond.

2. ICDF COMPLEX OPERATIONAL ORGANIZATION

This section discusses the organization, responsibilities, and training for ICDF personnel.

2.1 ICDF Complex Organizational Chart

The ICDF Complex management and operations team are the ICDF personnel assigned to operate the facility and to receive, stage, store, size, treat, and/or transport waste. Figure 2-1 is an organizational chart for the ICDF team. Assigned responsibilities for each position are discussed briefly in the following text.

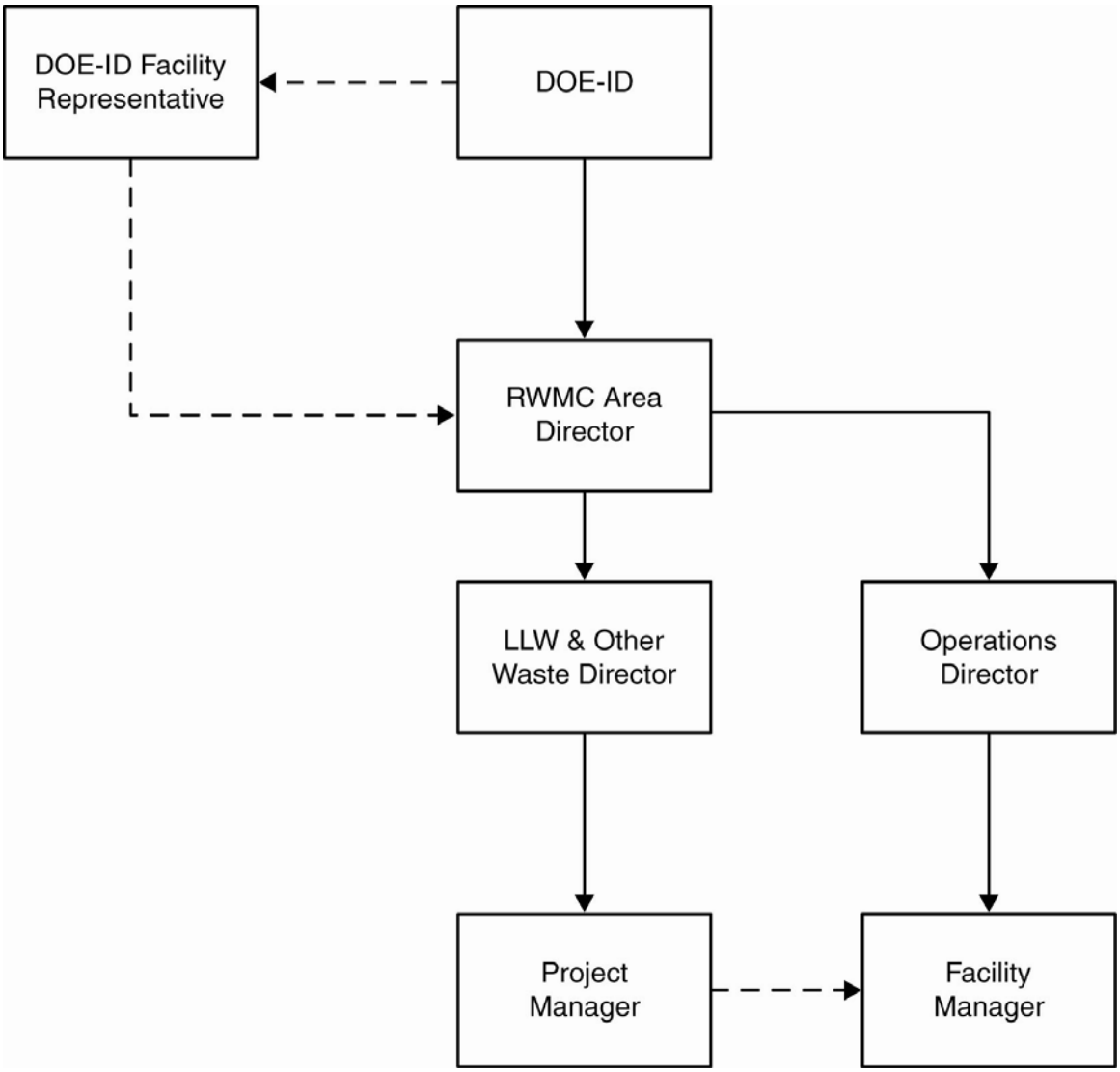


Figure 2-1. Organizational chart of ICDF personnel.

2.2 ICDF Complex Roles and Responsibilities

The following subsections describe the expected roles and responsibilities of ICDF personnel.

2.2.1 ICDF Management Team

The ICDF management team comprises senior managers who are responsible for establishing the vision and goals for operation of the ICDF Complex. In addition, they are responsible to ensure the facility operates in a manner that protects the worker, the public, and the environment. The management team also addresses vulnerabilities such as legal, financial, security, etc., and is responsible for ensuring compliance with applicable laws and regulations during operations and maintenance at the ICDF.

DOE-ID project manager – The ICDF Complex remediation project manager (PM) is responsible for ensuring that the ICDF Complex operations and maintenance activities are performed in accordance with the approved O&M Plan. All activities shall be coordinated with the INL operating contractor at ICDF. The DOE-ID remediation PM approves the annual operating and maintenance report.

DOE-ID facility representative – This position is responsible for DOE oversight of the facility to ensure that the contractor is operating facilities safely and efficiently (i.e., within the boundaries of those controls invoked in the facility authorization basis); the contractor's management system is effectively controlling conduct of operations and implementing integrated safety management objectives, principles, and functions; DOE line/program managers are cognizant of the operational performance of facility contractors; and effective lines of communication between DOE and its operating contractors are maintained during periods of normal operation and following reportable events, in accordance with DOE orders and requirements.

RWMC Operations director – The RWMC Operations director is responsible for the safe operations of all the facilities. A more detailed description of these responsibilities is included in the *Health and Safety Plan for INEEL CERCLA Disposal Facility Operations* (INEEL 2004).

RWMC LLW and other waste director – The RWMC LLW and other waste director is responsible for the overall scope, schedule, and budget for the ICDF project. The responsibilities also include ensuring that projects are performed in accordance with the applicable requirements and interfaces with external and internal stakeholders are defined and maintained.

ICDF project manager – As point of contact, the ICDF PM has overall responsibility for project execution, budgets, and schedule and for ensuring that the project performs in accordance with customer and management expectations. The ICDF PM is responsible for providing oversight of the day-to-day operations of the ICDF Complex, which includes ensuring implementation of identified regulatory requirements, implementation of all waste tracking requirements, implementation of the WAC, implementation of inspections using personnel trained to the requirements of this plan, and health and safety of all ICDF Complex personnel. The ICDF PM and the ICDF Complex facility manager work together to ensure that the ICDF Complex is operated in accordance with O&M Plan and with the documentation provided in the RAWP (DOE-ID 2005b).

ICDF Complex facility manager – This position is responsible for ensuring the ICDF Complex is operated within the approved authorization basis, operates within regulations, and provides protection of human health and the environment. The facility manager defines specific areas of responsibility for other team members. The facility manager also ensures that personnel are trained and qualified for their job assignments, and that INL and ICDF policies and procedures are followed. The facility manager's

responsibility includes implementation of all the requirements of this plan, implementation of O&M requirements, and coordination of O&M activities.

2.3 ICDF Complex Personnel Training

Training is performed to provide information on ICDF hazards and associated controls, procedures, and requirements for access. Personnel working at the ICDF Complex will have the 40 hours Hazardous Waste Operations and Emergency Response (HAZWOPER) training as is required by CERCLA regulations. Additionally, ICDF operations personnel will be trained to meet the requirements of 40 CFR 264.16(a)(1)(c) and appropriate ICP training requirements. All ICDF training is developed, conducted, and maintained in accordance with ICP training procedures. These procedures describe the processes that ensure the ICP workforce is properly trained to work effectively and safely. The detailed outline of this training is found in Table 6-1 of the ICDF Health and Safety Plan (HASP) and is considered the minimum training per position (INEEL 2004).

The facility manager is responsible to ensure that personnel have an adequate level of facility knowledge, including a general overview of the facility, facility-specific hazards, safety, and applicable procedures. Personnel requiring ICDF operations or position-specific qualifications or certifications must complete the necessary training prior to initiating ICDF activities. The supervisor conducting prejob briefings will complete the Occupational Safety and Health Act (OSHA) HAZWOPER supervisor course in addition to other required training. As appropriate, a qualified instructor or subject matter expert conducts and documents the training in accordance with ICP procedures.

Operational activities require a prejob briefing conducted by a supervisor or lead person. During this briefing, tasks associated with ICDF operations are outlined, hazards are identified, hazard controls/mitigation are reviewed, PPE requirements are discussed, waste minimization opportunities are communicated, and questions are answered. Following the completion of operational activities, a postjob briefing may be conducted with particular emphasis on capturing lessons learned and process improvement for future operations.

Additional details for radiation worker training are included in Section 3.7 of this O&M Plan and details concerning other training requirements are included in the HASP (INEEL 2004).

3. OPERATIONAL LIMITS AND ENVIRONMENTAL MONITORING

This section of the O&M Plan outlines operational limits that have been developed for the ICDF Complex, describes operational environmental monitoring/inspection or record/reporting requirements, and describes monitoring that will be performed. The contents of the main subsections are summarized below.

- Section 3.1, Waste Acceptance Criteria, describes the operational limits that were developed in the ICDF Complex WAC (DOE-ID 2005a).

- Section 3.2, IDAPA, describes the concentration guidelines and operational mass limits that have been modeled and established in "IDAPA Air Compliance Demonstration for the ICDF Complex" (EDF-2237). Operational mass limits based upon air emission and dispersion modeling will be used to schedule waste streams into the ICDF Complex to maximize operational flexibility while maintaining compliance with the appropriate IDAPA standards (IDAPA 58.01.01.585 and 586).

- Section 3.3, NESHAP, summarizes the modeling that was performed for the ICDF Complex previously and reasserts the operational goal of less than 1 mrem/yr that has been established for the ICDF Complex. Annual calculations will be performed to determine the NESHAP contribution from the ICDF Complex for inclusion in the INL annual NESHAP report. The method for completing these calculations is presented in "NESHAP Compliance Demonstration for the ICDF Complex" (EDF-2236).

- Section 3.4, Ecological Risk, summarizes the analysis that was previously performed in the Screening Level Ecological Risk Assessment (SLERA) (EDF-ER-311) and provides monitoring data needs for evaporation pond water and sediments.

- Section 3.5, Short-Term Risk, summarizes the results of a short-term risk assessment for workers and public receptors associated with the ICDF Complex (EDF-ER-327). The risk assessment evaluated exposure to ICDF Complex operators and the public for modeled concentrations of radioactive and nonradioactive hazardous substances representative of the ICDF landfill, the evaporation pond, and the decon building. The assessment also considers the exposure with regard to the landfill and evaporation pond WAC concentration guidelines specified in the ICDF Complex WAC (DOE-ID 2005a) as a method to assist in determining a bounding limit for a proposed visitor.

- Section 3.6, Groundwater, provides a summary of the groundwater remedial action objectives (RAOs) established for the ICDF Complex in the OU 3-13 ROD (DOE-ID 1999), describes how RAOs were modeled in the various components of the ICDF Complex design, and refers to other sections or documents that describe how groundwater RAOs will be demonstrated for the ICDF Complex.

- Section 3.7, Radiological Controls, describes the radiological controls program that has been developed at INL and will be implemented during operation of the ICDF Complex.

- Section 3.8, Action Leakage Rate, provides a summary of the action leakage rates (ALRs) that have been calculated for the ICDF landfill and evaporation pond. A discussion is provided regarding the comparison of the ALRs to actual sump flow rate data.

- Section 3.9, Environmental Monitoring and Recordkeeping, provides a summary table of all ICDF Complex operational-applicable or relevant and appropriate requirements (ARARs) that have monitoring, inspection, report, or recordkeeping requirements. This section also summarizes the environmental monitoring, including groundwater monitoring, waste verification sampling, treated waste sampling, and O&M sampling at the ICDF Complex that will be performed as part of the ICDF Complex operations. This section refers to the appropriate documents for additional details about the monitoring program for a particular media or data need.

- Section 3.10, Sampling and Analysis/Sampling Quality Assurance, summarizes the sampling plans that have been developed and will be implemented during ICDF Complex operations. QA for the data collected in accordance with the sampling plans also is presented.

3.1 Waste Acceptance Criteria

The ICDF Complex WAC (DOE-ID 2005a) was developed and established as part of the SSSTF Remedial Design/Construction Work Plan (CWP) (DOE-ID 2002b) and the ICDF RD/CWP (DOE-ID 2002a).

Based upon limits established in the ICDF Complex WAC (DOE-ID 2005a), 40 CFR 264 Subpart BB and 40 CFR 264 Subpart CC do not apply to the operations of the ICDF Complex. This is based upon the WAC limiting the organic concentrations in wastes to less than 10% by weight; this limit is an exception to 40 CFR 264 Subpart BB per 40 CFR 264.1050(b). Additionally, the ICDF Complex WAC limits the volatile organic concentration to less than 500 ppm by weight; this limit is an exemption from 40 CFR 264 Subpart CC per 40 CFR 264.1082(c)(1).

3.1.1 ICDF Complex Waste Acceptance Criteria

The ICDF Complex WAC document provides the basis for the types and quantities of wastes allowable for receipt, staging, storage, sizing, and treatment at the ICDF Complex, provides packaging and radiological criteria, and sets the criteria for waste to be treated at the treatment unit. Implementation of the ICDF Complex WAC will ensure compliance with the OU 3-13 ROD (DOE-ID 1999) and provide protection of human health and the environment, including the SRPA.

3.1.2 ICDF Landfill Waste Acceptance Criteria

The ICDF landfill WAC (Section 5 of the ICDF Complex WAC [DOE-ID 2005a]) specifies the chemical and radiological WAC for wastes that will be disposed in the landfill. The landfill WAC is a critical component of the entire ICDF design. The WAC have been developed based on modeling assumptions so that wastes placed in the ICDF landfill will not cause groundwater in the SRPA to exceed either maximum contaminant levels, a hazard index (HI) of 1, or 10^{-4} cumulative risk levels, which are defined as RAOs in the OU 3-13 ROD (DOE-ID 1999). Modeling to support the WAC development was documented in "Fate and Transport Modeling Results and Summary Report" (EDF-ER-275). Compliance with the requirements of the landfill WAC will ensure protection of human health and the environment, including the SRPA.

In addition, projected chemical and radiological concentrations of landfill leachate were compared with published manufacturer's compatibility data and other project testing to ensure wastes placed in the landfill would not damage either the natural or synthetic components of the landfill liner system. The results of this comparison are presented in "Liner/Leachate Compatibility Study" (EDF-ER-278).

Finally, the landfill WAC also were established by considering other regulatory requirements, including ARARs for the ICDF landfill. Examples of these requirements include, but are not limited to, the following:

- Wastes cannot exceed 10 nCi/g total transuranic isotopes
- Wastes cannot be greater than Class C, as defined by 10 CFR 61
- Total volatile organics in the evaporation pond cannot exceed 500 ppm by weight, which limits the waste concentrations in the landfill so that leachate concentrations do not exceed the requirement
- Total PCBs cannot exceed 500 mg/kg
- Wastes from WAGs other than WAG 3 must meet LDRs.

The ICDF Complex WAC (document) provides guidance for tracking wastes that enter the ICDF Complex for ultimate disposal to the landfill to determine what percentage of the WAC limit has been used to date (DOE-ID 2005a):

1. Each waste load or container will have a Container Profile identifying the substances and concentrations contained in the waste. This Container Profile may be the same as the Material Profile, but will not exceed the concentrations in the Material Profile.
2. The mass of each constituent placed in the landfill will be calculated for each waste load or container using the information from the Container Profile (weight × concentration for each constituent).
3. A database or spreadsheet will be kept identifying each constituent and the cumulative mass of each constituent placed in the landfill. The Waste Tracking Plan for the ICDF Complex describes the tracking process in more detail (PLN-914).
4. A running inventory will be maintained of the total mass of each constituent received at the facility. The total mass received for each substance will be compared to the total mass limit of the substance identified in the WAC. This comparison for each substance will provide an indication of how much of the WAC limit has been used by the actual substances in the waste. In addition, average concentrations of the constituents in each container or waste load will be checked against concentration-based criteria.

It is important to note that although concentration guidelines for landfill waste acceptance are provided in the ICDF Complex WAC, the operational limit is actually the total contaminant mass or activity, unless other operational concentration-based limits (established elsewhere in Section 3 of this O&M Plan) are provided. The landfill concentration guidelines are provided in the ICDF Complex WAC for the ease of the ICDF Complex user in determining whether a particular waste stream may be acceptable.

3.1.3 ICDF Evaporation Pond Waste Acceptance Criteria

The ICDF evaporation pond WAC (Section 6 of the ICDF Complex WAC [DOE-ID 2005a]) was developed to provide the basis for the limiting concentrations of radioactive and nonradioactive contaminants in the ICDF evaporation pond. The aqueous wastes will include leachate from the ICDF landfill, WAG 3 purge and development water from monitoring well drilling operations, and secondary

aqueous wastes generated as a result the ICDF Complex operations. Other CERCLA generated liquid wastes maybe disposed in the ICDF evaporation pond subject to meeting the WAC. Compliance with the requirements of the ICDF evaporation pond WAC will ensure protection of human health and the environment.

The ICDF evaporation pond WAC was developed in a similar fashion to the ICDF landfill WAC by evaluating liner compatibility concentrations and other regulatory requirements (ARARs) that provided a concentration limit for the aqueous wastes disposed to the pond. Groundwater RAOs were not evaluated for the evaporation pond WAC because the analysis performed for the ICDF landfill WAC would also be protective for the evaporation pond. The comparison performed to determine the limiting concentration for the evaporation pond is presented in EDF-ER-274.

To evaluate liner compatibility, chemical and radiological concentrations of leachate were compared with published manufacturer's compatibility data and other project testing to ensure wastes placed in the evaporation pond would not damage either the natural or synthetic components of the evaporation pond liner system. The results of this comparison are presented in "Liner/Leachate Compatibility Study" (EDF-ER-278).

The evaporation pond WAC were also established by considering other regulatory requirements that are ARARs. Examples of these requirements include, but are not limited to, the following:

- Waste containing greater than 10 nCi/g as expressed in liquid units (10 nCi/mL or 1E+07 pCi/L) of transuranic (TRU) radionuclides is prohibited from disposal at the ICDF evaporation pond.
- Direct disposal of PCB wastes is prohibited. Although unlikely, PCBs may be a component of the ICDF leachate. As a CAMU for the ICDF leachate, the evaporation pond may accept F039 (landfill leachate) waste.
- Hazardous waste with greater than 500 ppm volatile organic compounds (VOCs) is prohibited.
- Hazardous waste with organic concentrations greater than 10% by weight is prohibited.
- Waste containing greater than 1% chelating compounds by weight is prohibited.
- Spent nuclear fuel and high-level waste are prohibited.

3.2 IDAPA

Ambient air standards for the Idaho Department of Environmental Quality (DEQ) are administered by IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho." ARARs for the ICDF Complex are tabulated in IDAPA Section 58.01.01.585, "Toxic Air Pollutants Non-Carcinogenic Increments," and IDAPA Section 58.01.01.586, "Toxic Air Pollutants Carcinogenic Increments."[b]

Air emission and dispersion modeling was performed to develop ICDF Complex waste concentration guidelines and operational mass limits that maximize operational flexibility and meet IDAPA standards (IDAPA 58.01.01.585 and 58.01.01.586). Facilities in the ICDF Complex modeling included the treatment unit, landfill, and evaporation pond. Modeling assumptions, methodology, input

b. As promulgated in December 1999.

parameters, and results of the analysis are included in "IDAPA Air Compliance Demonstration for the ICDF Complex" (EDF-2237).

For the modeling, a list of constituents was prepared that included only those substances with values listed in both the design inventory (EDF-ER-264) and IDAPA 58.01.01.585 and 58.01.01.586. Two computer models were used to develop the concentration guidelines: *WATER9* (TTN 2002) for modeling of emission rates for volatiles and semivolatiles and *ISCST3* (EPA 1995a) for dispersion modeling of volatiles, semivolatiles, and nonvolatiles as particulate.

The modeling effort used an iterative process based on an assumed initial concentration and a list of required input parameters for each model. The initial concentration was modified upward or downward depending upon the results of the subsequent modeling. The *WATER9* model was run for the volatile and semivolatile constituents, with the resulting modeled emission rates used as inputs to the *ISCST3* dispersion model. Nonvolatiles were modeled directly using *ISCST3*. This iterative process was continued until a modeled concentration of approximately 95% of the IDAPA-listed concentration was achieved. These modeled concentrations established the waste concentration guidelines required to meet the IDAPA limits.

The modeling resulted in a particulate-based concentration guideline for the ICDF landfill, a volatilization-based concentration guideline for the landfill, and a volatilization-based concentration guideline for the ICDF evaporation pond. The smaller of the landfill concentration guidelines was carried forward for further analysis, as was the evaporation pond concentration guideline. These modeled concentration guidelines were then compared with the respective WAC guideline concentrations (DOE-ID 2005a) for each constituent. Modeled concentration guidelines were considered to be within WAC guidelines for a given constituent if the modeled value was greater than the WAC guidelines.

Mass-based operating limits were calculated using the emission-based concentration guidelines and the loading rates for the landfill and evaporation pond. In some cases, the emission-based concentration guidelines were below the WAC-guideline concentrations. Two limits are specified—24-hour maximum and annual average—to reflect the IDAPA air toxic regulations for noncarcinogens (24-hour standards) and carcinogens (annual standards), respectively. A complete listing of the mass-based operating limits is included in EDF-2237.

Table 3-1 lists those constituents with modeled concentration guidelines below their corresponding WAC guideline concentrations. Included in this table are the WAC guidelines, modeled concentration guidelines, and the final annual and 24-hour operating limits. Operating limits for all modeled constituents are included in EDF-2237.

For constituents that were operationally limited for a single facility (e.g., either the landfill or the evaporation pond), the input concentrations for the ICDF landfill and ICDF evaporation pond were adjusted and remodeled to balance the loading between the facilities, in order to eliminate operationally limited conditions where possible.

Where the constituent had WAC-based limits for both facilities (e.g., 1,1-dichloroethene), both WAC limits were used as the initial basis for the load-balancing emissions model to demonstrate compliance with the IDAPA standards. In cases where no ICDF evaporation pond WAC guideline was specified (e.g., hexachlorobutadiene), the ICDF landfill WAC limit was used as the initial set value for the load-balancing emission modeling, with the ICDF evaporation pond concentration guideline adjusted accordingly to meet the IDAPA standards.

Table 3-1. Summary of IDAPA emission-based operating limits for operationally limited constituents.

Compound (CAS No.)	WAC Guideline Concentrations		Guideline Concentrations[c]		Mass-Based Operational Limits	
	Landfill[a] (mg/kg)	Evaporation Pond[b] (mg/L)	Landfill (mg/kg)	Evaporation Pond (mg/L)	Landfill[d] (kg/day)	Evaporation Pond[e] (kg/day)
Carcinogens (Annual Limit)						
Benzidine (92-87-5)	1.72E+01	1.00E+04	1.72E+01	3.88E+03	9.92E+00	5.74E+00
Benzo(a)pyrene (50-32-8)	1.05E+02	2.00E+03	1.05E+02	3.11E+02	6.06E+01	4.60E-01
Hexachlorobenzene (118-74-1)	1.14E+01	No limit	8.25E+00	6.00E-02	4.76E+00	8.88E-05
Hexachlorobutadiene (87-68-3)	2.07E+01	No limit	2.07E+01	4.86E+04	1.19E+01	7.19E+01
Noncarcinogens (Annual Limit)						
Ethyl cyanide (as Cn – cyanide) (592-01-8)	3.31E+04	1.00E+04	4.14E+03	6.90E+04	2.39E+03	1.02E+02
Hexachlorocyclopentadiene (77-47-4)	1.14E+01	No limit	1.14E+01	2.15E+04	6.58E+00	3.18E+01
Mercury (7439-97-6)	9.45E+03	5.00E+05	1.28E+02	6.75E+02	7.40E+01	9.99E-01
Naphthalene (91-20-3)	4.25E+02	No limit	4.25E+02	1.00E+06	2.45E+02	1.48E + 03
Noncarcinogens (24-Hour Maximum Limit)						
Ethyl cyanide (as Cn - cyanide) (592-01-8)	3.31E+04	1.00E+04	2.50E+03	4.17E+04	3.66E+03	6.17E+01
Hexachlorocyclopentadiene (77-47-4)	1.14E+01	No limit	3.42E+02	6.84E-01	5.00E+02	1.01E-03
Mercury (7439-97-6)	9.45E+03	5.00E+05	7.74E+01	4.07E+02	1.13E+02	6.02E-01
Naphthalene (91-20-3)	4.25E+02	No limit	1.10E+05	2.17E+04	1.61E+05	3.21E + 01

Note: A complete list of operating limits for all IDAPA-listed constituents is included in EDF-2237.

a. Taken from Section 5 of the ICDF Complex WAC (DOE-ID 2005a).

b. Taken from Section 6 of the ICDF Complex WAC (DOE-ID 2005a).

c. Values shown have landfill concentrations set at the WAC guideline concentrations. The evaporation pond concentrations have been maximized but are still below WAC guideline concentrations.

d. These values were calculated using the annual (or 24-hour) concentration guidelines (mg/kg) × (1500 kg/m^3) × (503 yd^3/day) × (0.7646 m^3/yd^3)/(1E+06 mg/kg).

e. Mass-based operational limits are based on an annual (or 24-hour) average daily leachate rate of 391 gal/day. These concentrations were calculated using the annual (or 24-hour) concentration guidelines (mg/L) × (391 gal/day) × (3.785 L/gal) / (1E+06 mg/kg).

Controls and tracking requirements for WAC-limited constituents are discussed in the respective sections of the ICDF Complex WAC (DOE-ID 2005a). Modeled operational limits below WAC values indicate that additional waste tracking and/or operational controls may be required, in accordance with the Waste Tracking Plan (PLN-914).

Operational controls may be required for benzidine, benzo(a)pyrene, hexachlorobenzene, hexachlorobutadiene, ethyl cyanide (as cyanide), hexachlorocyclopentadiene, mercury, and naphthalene, which are operationally limited for the landfill and/or evaporation pond based on a comparison of modeled-concentration guidelines to WAC guidelines. Operational controls may be required to ensure that the mass-based operational limits are not exceeded. Operational controls will include, but are not limited to, storage or staging of waste, staggering of loads transported to the ICDF landfill over time, increased soil coverage for loads with operationally limited constituents, treatment of soils (e.g., grouting), and other types of controls evaluated on a case-by-case basis.

3.3 NESHAP

NESHAP are published in the *Code of Federal Regulations* at 40 CFR 61. The relevant standard for the ICDF Complex operations is "Subpart H–National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities" (40 CFR 61, Subpart H). The regulation states the following:

> Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr.

Radionuclides are contained in the CERCLA remediation wastes destined for the ICDF Complex. Activities associated with the collection, handling, and disposal of these wastes are anticipated to release low amounts of radionuclides into the ambient air. Potential NESHAP emissions from the ICDF Complex operations (EDF-ER-290) were estimated and the emission estimates were modeled to show the impact to the nearest public receptor. The results of the analyses show the ICDF Complex operations will have an impact of less than 0.05 mrem/yr, below the NESHAP standard of 10 mrem/yr.

Compliance with the NESHAP standard will be evaluated on an annual basis in conjunction with INL on a Sitewide basis. The ICDF Complex will not contribute enough emissions to the Sitewide release total that would cause an exceedence of the standard. To ensure that the ICDF Complex is not a major factor in changing INL NESHAP status, an operation goal for the Complex will be set at less than 1 mrem/yr. This will be met through operational constraints as outlined in the ICDF Complex WAC document (DOE-ID 2005a). The emissions from the ICDF Complex will be calculated on an annual basis, as described in "NESHAP Compliance Demonstration for the ICDF Complex" (EDF-2236) and included in the INL annual NESHAP report. If the operational goal of 1 mrem/yr is exceeded, the Agencies (i.e., DOE, EPA, and DEQ) will be notified.

EDF-2236 uses EPA's "Compilation of Air Pollutant Emission Factors," AP-42 (EPA 1995b) to estimate NESHAP emissions from the following ICDF Complex-related activities:

- Digging contaminated soil
- Loading contaminated soil
- Unloading contaminated soil

- Landfill operations
- Evaporation pond processes
- Decon building operations.

For each of these activities, a final weight (pounds) of total suspended particles is determined, which would be used for the necessary NESHAP calculations.

3.4 Ecological Risk

A SLERA was performed and is presented in EDF-ER-311. The approach of the assessment was to evaluate the landfill soil for exposure to terrestrial receptors and to evaluate the evaporation pond for both terrestrial (drinking water) and aquatic receptors. The assessment approach summarized below was used to evaluate WAC and to direct and focus monitoring to be performed at the ICDF Complex.

3.4.1 Summary of Ecological Risk Assessment

The SLERA (EDF-ER-311) was based on modeled contamination levels in the soil and leachate in the evaporation pond and for the ICDF Complex during its operational period. Methods were very conservative, as were the modeled inventories. The concentrations used in this SLERA were from the Design Inventory (EDF-ER-264) and/or the CERCLA Waste Inventory Database (CWID) Report (DOE-ID 2000).

The exposure parameters used in the assessment were adapted to better represent the conceptual site model for the ICDF Complex. For the landfill site, the exposure duration for each species was reduced to more realistically reflect the individual receptor's potential use of the site. Conversely, the presence of water in the evaporation pond and other related structures (buildings, etc.) is expected to encourage use by selected species. As discussed in EDF-ER-311, the ingestion of water was evaluated in conjunction with the exposure evaluated at the landfill. For all contaminants, the maximum concentration anticipated to be in the surface water was evaluated. It is expected that this will overestimate the exposure because contaminants of potential concern (COPCs) and radiological COPCs in the pond should go to equilibrium with the sediment reducing the concentrations.

Both terrestrial and aquatic receptors were assessed. However, aquatic organisms, such as fish and other benthic organisms, were not assessed, as this facility is not considered a natural water body. When evaporation pond operations are discontinued, the pond will be eliminated as a source of drinking water for those species present at INL. The deer mouse, mule deer, coyote, Townsend's western big-eared bat, mourning dove, sage grouse, red-tailed hawk, and bald eagle were selected as terrestrial receptors. The mallard duck and spotted sandpiper are included as aquatic receptors for assessment at the ICDF evaporation pond. These species, although modeled as having a limited use of the facility, are the risk drivers due to the exposure from aquatic sources.

For radiological COPCs, DOE Headquarters has recently developed frameworks, methods, and guidance for demonstrating protection of the environment from the effects of ionizing radiation. The proposed standard is called *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* (DOE 2002), and is approved by EH-4 for interim use by DOE program and field elements in evaluating doses to biota. This technical standard provides dose evaluation methods that can be used to meet protectiveness requirements.

The DOE standard provides a general screening concentration that allows the evaluation of radionuclides in water, co-located sediments, and soils for both the aquatic and terrestrial system. This standard is used for those radiological COPCs that have both leachate and soil concentration. It is well accepted that sediment and water contaminant concentrations will come to equilibrium within a system. For this analysis, calculating a sediment concentration from the water is not appropriate, as this will be the leachate concentration estimated over 15 years of operation. Therefore, for this assessment, the water concentration summed over all years of operation is considered conservative of the dose that receptors using the pond would receive. Generic biotic concentration guides (BCGs) are used within each system. A sum of fractions approach was used in comparing radionuclide concentrations in environmental media to the BCGs contained in the standard lookup tables. None of the three radionuclides detected in both the leachate and soil exceeds the standards criteria.

As discussed in the SLERA (EDF-ER-311), hazard quotients (HQs) and HIs were primarily used to assess risk. In summary, the results indicate that Kr-85 was the only radionuclide with HQs greater than or equal to 1.0 for internal exposure. This radionuclide is a chemically inert gas that was conservatively assumed to be present in the inventory. However, it is highly unlikely that it will be present in the soil at the concentrations modeled due to its volatility. Additionally, Kr-85 has no concentration factor for feed-to-tissue uptake to develop a realistic exposure assessment, because it is a gas and would mainly present an inhalation risk. Also, the half-life for this radionuclide is 10.8 years and it is not anticipated to remain at the concentrations modeled throughout the lifetime of the ICDF Complex. Based on this rationale, it was eliminated as a concern and is considered to present minimal risk.

Concentrations in the evaporation pond were compared to acceptable concentrations. This comparison indicates that sulfate and vanadium concentrations in the evaporation ponds could potentially reach concentration levels of concern to ecological receptors.

The SLERA also presents a qualitative discussion of risk to receptors of special concern (EDF-ER-311). It indicates that of the INL sensitive bird species, the burrowing owl and bald eagle were rarely sighted at the wastewater ponds in the INTEC area and that exposure to other species should be limited. The Cieminski (1993) study indicated that there was no apparent relationship between the number of small mammals captured and the distance of the trap from the pond. The pygmy rabbit and Townsend's western big-eared bat were not sighted at wastewater ponds. The sagebrush lizard has been sighted in the area. However, the quality of the habitat is spotty. The disturbance in the area surrounding the ICDF Complex should significantly reduce any use of this area. Sagebrush lizard prefer rock outcrops (which do not exist in the area) and would be found in the undisturbed sagebrush areas along the north and west side of the INTEC facility (DOE-ID 2001).

3.4.2 Acceptable Concentrations of Water in Evaporation Pond

Acceptable concentration levels for water in the evaporation pond can be based on acceptable leachate concentrations (ALCs). ALCs for use at the ICDF Complex were developed for those COPCs identified in "Leachate/Contaminant Reduction Time Study" (EDF-ER-274). The proposed standard *A Graded Approach for Evaluating Radiation Doses to Aquatic and Terrestrial Biota* (DOE 2002) was used to provide ALCs for radionuclide COPCs. Table 3-2 presents the initial values considered acceptable in each media for the radionuclide contaminants of concern.

For nonradiological COPCs, the SLERA (EDF-ER-311) assessed the mallard and spotted sandpiper for the development of ALCs. The rationale and development of the ALCs are presented in Appendix A of the SLERA (EDF-ER-311).

Table 3-2. Acceptable media concentrations for selected radionuclides.

	Aquatic Receptors		Terrestrial Receptors	
Radionuclide	BCG (water) (pCi/L)	BCG (sediment) (pCi/g)	BCG (water) (pCi/L)	BCG (soil) (pCi/g)
I-129	2.7E + 04	NA	5.4E + 06	6.E + 03
Tc-99	5.40E + 05	NA	3.42E + 06	4.E + 03
U-238	2.16E + 02	NA	5.4E + 05	2.E + 03

BCG = biotic concentration guide
NA = not applicable

The ALCs presented in Table 3-3 can be used to determine if the concentrations of contaminants in the evaporation pond are within an acceptable level. Ambient water quality is considered protective of 95% of aquatic receptors (including fish and other benthic organisms) in a natural water body. Ambient water quality criteria would be too conservative for the evaporation pond, however, since it is not considered a natural water body. After the ICDF mission is accomplished, the pond will be eliminated as a source of drinking water for those species present at INL. However, the evaporation pond will be used by both waterfowl and terrestrial receptors as a water source. The ALCs were developed to be protective of both terrestrial and aquatic receptors. This includes the deer mouse, mule deer, coyote, Townsend's western big-eared bat, mourning dove, sage grouse, red-tailed hawk, and bald eagle as terrestrial receptors and the mallard duck and spotted sandpiper as aquatic receptors. A concentration of a contaminant in the evaporation pond below either the ALC or ambient water quality criteria would be considered protective of ecological receptors.

3.4.3 Monitoring Recommendations for Ecological Receptors

As a management practice, soil fixative or clean soil will be used on the landfill waste surface prior to winter shutdown to control dust and erosion. Additional information about the soil fixative and its application is provided in Appendix A of this O&M Plan. This soil fixative or clean soil should limit exposure of the contaminated soil to ecological receptors to acceptable levels based on the results of the SLERA (EDF-ER-311). Plants were not assessed in this ecological risk assessment because it was assumed that all vegetation growth within the waste disposal areas will be hindered during the operational period. Specifically, during operation of the landfill, the area where deposition of contaminated soil is occurring will be kept clear of vegetation. Although erosion control will be maintained using plants, the areas vegetated will be on the sides of the landfill and should not have contact with contaminated soil. Post-operationally, the ICDF landfill will be capped with a robust cover with a middle section designed to eliminate biointrusion (burrowing animals and root intrusion).

The pond will be built with bare, steep shorelines and conditions will be maintained to limit nutrient enrichment and vegetation. The Cieminski (1993) study evaluated pond characteristics that were more or less favorable to wildlife. Table 3-4 lists the characteristics to be considered in management of wastewater ponds, in order of importance.

Table 3-3. Acceptable contaminant concentrations for use at the ICDF evaporation pond.[a]

COPC	Fraction of Total Water Body Concentration in Water Column (unitless)	Fraction of Total Water Body Concentration in Benthic Sediment (unitless)	ALC (mg/L)	Modeled Concentrations (mg/L)	Ambient Water Criteria (ug/L)	Sediment Quality Criteria (ppb dry weight)
Arsenic	6.43E - 01	3.57E - 01	6	1.53	340	5,900
Boron	—	—	—[b]	40.7	—	—
Calcium	—	—	—[c]	4.86	—	—
Chlorine	—	—	—[d]	16.6	19	—
Magnesium	—	—	—[c]	0.25	—	—
Phosphorus	—	—	—[e]	6.8	—	—
Potassium	—	—	—[c]	0.089	—	—
Selenium	9.05E - 01	9.50E - 02	0.07	0.073	5.0 (13 - 186)	290
Sulfur	—	—	—[d,e]	373	—	—
Vanadium	5.11E - 02	9.49E - 01	3	3.48	—	50,000
Zinc	4.60E - 01	5.40E - 01	8	0.031	120	123,100

a. Concentrations below ALCs or ambient water quality criteria will be protective of ecological receptors using the evaporation pond.

b. Boron toxicity and ambient water quality criteria are lacking. See the discussion in Section A-1 of EDF-ER-311.

c. Toxicity reference values are not available to establish an ALC for calcium, magnesium, or potassium. However, these COPCs are essential nutrients, and are not considered toxic except under extremely high concentrations (10 × background).

d. As a soil-water partition coefficient (K_d) value was not available for chlorine or sulfur, an ALC could not be calculated.

e. Toxicity reference values were not available for establishing ALCs for phosphorus or sulfur.

NOTE: — indicates no information available or no value calculated.

ALC = acceptable leachate concentration
COPC = contaminant of potential concern

Table 3-4. Pond characteristics to discourage or encourage wildlife use of constructed ponds, listed in order of importance (Cieminski 1993).

	Effect on Wildlife Use	
Characteristic	Discourage	Encourage
Surface area	Minimize	Maximize
Invertebrates	Minimize	Maximize
Shrub cover	None	Maximize
Bare shoreline	(species dependent)[a]	
Shoreline slope	Steep	Low
Shoreline length	Minimize	Maximize
Emergent vegetation	No	Yes
Fencing	Yes	No
Height of berms	High	Low
Length orientation	NW-SE	SW-NE

a. Bare shoreline discourages use by ruddy ducks, American coots, Brewer's sparrows, white-crowned sparrows, and chipping sparrows, and encourages use by spotted sandpipers, Wilson's phalaropes, western sandpipers, and Brewer's blackbirds.

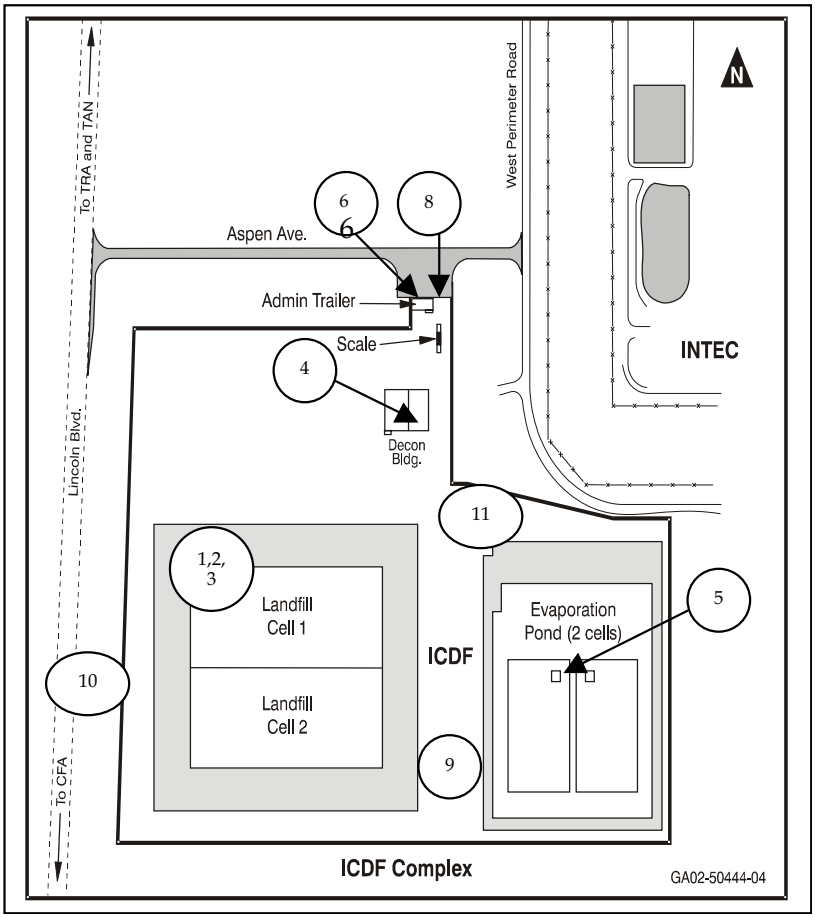
During the field season of 2003, an evaluation of the baseline population will be performed. This will include an evaluation of the small mammals, birds, and reptile use of the current facility area.

Characterization of contaminant concentrations in water and sediment will be performed using the standard sampling methodology (lower detection limits for ecological receptors than the standard Contract Laboratory Program [CLP] method will be identified). From these results and the assessment of use by biota in the area, risk assessment results from the permitting process can be verified. However, it is important to note that the use of concentration data from co-located surface water and sediment samples is preferred and will result in a less conservative, more realistic evaluation.

3.5 Short-Term Risk

A short-term risk assessment for workers and public receptors associated with the ICDF Complex is presented in EDF-ER-327 (Appendix E of the RAWP [DOE-ID 2005b]), per the National Oil and Hazardous Substances Pollution Contingency Plan, commonly referred to as the National Contingency Plan (40 CFR 300). The risk assessment considers/compares exposure to ICDF Complex operators and the public to modeled concentrations of radioactive and nonradioactive hazardous substances representative of the ICDF landfill, the evaporation pond (with two cells), and the decon building. The assessment also considers the exposure in regards to the landfill WAC concentration guides, as a method to assist in determining a bounding risk for the proposed visitor. The time period bounding the risk assessment is the operational life of the ICDF Complex. This assumes a 15-year design life of the landfill disposal cell and decon building, and a total of 45 years for the evaporation pond. The latter period includes the 15-year operational period, plus an additional 30 years of ICDF postclosure operation to handle any leachate that may be generated following final cover of the landfill.

The risk assessment includes a range of exposure scenarios that capture various receptors associated with the ICDF Complex. Included are five Radiation Worker II exposure scenarios, four exposure scenarios for the general employee radiation training worker, two entry exposure scenarios for a member of the public, and one general public exposure scenario, as shown in Figure 3-1.



Radiation Worker II
1. Landfill bulldozer operator
2. Landfill laborer
3. Landfill truck driver
4. Treatment area operator
5. Evaporation pond operator

General Employee Radiation Training Worker
6. ICDF office worker
7. CFA office worker (not shown)
8. Delivery driver
9. INL worker

Member of the Public Entry
10. INL visitor
11. ICDF Complex visitor (assumed at each area)

General Public
12. Highway 26 Rest Area visitor (not shown)

Figure 3-1. ICDF Complex exposure scenario, exposed individual locations.

The results of the radiological and nonradiological risk evaluations for the various exposure scenarios and associated groups are discussed further in the following sections. It should be noted that as low as reasonably achievable (ALARA) and standard health and safety practices will be used to ensure target risk levels are not exceeded. All exposure scenarios are within the acceptable target risk levels with the exception of the following four ICDF Complex exposure scenarios:

- Landfill laborer: 15 rem/yr exceeds the target risk level of 5 rem/yr
- Landfill truck driver: 6.6 rem/yr exceeds the target risk level of 5 rem/yr
- Evaporation pond operator: HI of 4 exceeds the target risk level of an HI of 1
- ICDF Complex visitor: 0.044 rem/yr exceeds the target risk level of 0.015 rem/yr.

The ICDF Complex operators and other INL employees will maintain personnel exposures ALARA based on INL contractor safety and RadCon management practices (see Section 3.7). Additional monitoring or operational limits are not required above and beyond those defined for the WAC.

3.5.1 Summary of Risk Estimates for Radiation Worker (II) Exposure Scenarios

A summary of the total effective dose equivalents (TEDEs) for radiation exposures, noncancer HI, and cancer (excess lifetime cancer risk [ELCR]) risk estimates for nonradiation exposures are presented in Table 3-5 for each of the identified radiation worker exposure scenarios.

Table 3-5. Summary of total effective dose equivalent and risk estimates for radiation worker exposure scenarios.

	Radiation	Nonradiation	
Exposure Scenario	TEDE (rem/yr)	Noncancer HI	ELCR
Landfill bulldozer operator	4.4 E + 00	4.0 E – 01	8.0 E – 06
Landfill laborer	1.5 E + 01	4.0 E – 01	8.0 E – 06
Landfill truck driver	6.6 E + 00	4.0 E – 01	8.0 E – 06
Treatment area operator	3.6 E – 02	9.0 E – 01	1.0 E – 05
Evaporation pond operator	1.9 E - 02	4.0 E + 00	1.0 E - 07
Target risk levels	5.0 E + 00	1.0 E + 00	1.0 E - 04

ELCR = excess lifetime cancer risk
HI = hazard index
TEDE = total effective dose equivalent

With the exception of the landfill laborer and truck driver, the TEDEs for each receptor evaluated under the radiation worker exposure scenarios are less than the maximum radiation dose limit of 5 rem/yr. The TEDE for the landfill laborer and truck driver exceeds the radiation dose limit of 5 rem/yr.

It is important to note that the TEDE values calculated for the landfill laborer are based on unmitigated risk. In no event will radiation workers be allowed to exceed the regulatory limit of 5 rem/year for occupational exposures. Section 6.0 of EDF-ER-327 summarizes the approach for mitigating risk at INL to administrative levels as far below the regulatory limits as reasonably achievable.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. With the exception of the evaporation pond operator, the potential HI for noncancer effects is less than or equal to 1 for all ICDF Complex exposure scenarios. The HI for noncancer effects for the evaporation pond operator is 4; the primary contributors to noncancer risk are 2-nitroaniline, 3-nitroaniline, and 4-nitroaniline. The project HASP adequately addresses mitigation measures associated with these constituents (INEEL 2004).

3.5.2 Summary of Risk Estimates for General Employee Radiation Training Worker Exposure Scenarios

A summary of the TEDE for radiation exposures, noncancer HI, and ELCR risk estimates for general employee radiation training worker exposures is presented in Table 3-6 for each of the identified exposure scenarios.

Table 3-6. Summary of total effective dose equivalent and risk estimates for nonradiation worker exposure scenarios.

	Radiation	Nonradiation	
Exposure Scenario	TEDE (rem/yr)	Noncancer HI	ELCR
ICDF office worker	<1.0 E - 03	<1.0 E – 02	5.0 E - 09
CFA office worker	<1.0 E - 03	<1.0 E – 02	3.0 E - 12
Delivery driver	<1.0 E - 03	<1.0 E – 02	4.0 E - 09
INL worker (power line management)	8.0 E - 03	2.0 E – 02	3.0 E - 07
Target levels	1.0 E - 01	1.0 E + 00	1.0 E - 04

CFA = Central Facilities Area
ELCR = excess lifetime cancer risk
HI = hazard index
ICDF = Idaho CERCLA Disposal Facility
INL = Idaho National Laboratory
TEDE = total effective dose equivalent

The TEDE for the nonradiation worker scenarios is less than the radiation dose limit of 0.1 rem/yr. It is important to note that the TEDE values calculated for the nonradiation worker exposure scenarios are based on unmitigated risk. In no event will site workers be allowed to exceed the regulatory limit of 0.1 rem/yr for occupational exposures. Section 6.0 of EDF-ER-327 summarizes the approach for mitigating radiation risk at INL to administrative levels as far below the regulatory limits as reasonably achievable.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential HI for noncancer effects is less than 1 for each nonradiation worker exposure scenario.

3.5.3 Summary of Risk Estimates for Member of the Public Entry Exposure Scenario

A summary of the TEDE for radiation exposures, noncancer HI, and ELCR risk estimates for the escorted member of the public entry exposures is presented in Table 3-7.

The TEDE for the INL visitor is below the radiation dose limit of 0.015 rem/yr. The INL visitor was assumed to be exposed to the entire ICDF landfill WAC constituent concentrations. The TEDE for the ICDF Complex visitor exceeds the radiation dose limit of 0.015 rem/yr. The ICDF Complex visitor was assumed to be exposed to the design inventory constituent concentrations only. The WAC constituent concentrations, in some instances, are many orders of magnitude greater than the design inventory constituent concentrations.

Table 3-7. Summary of TEDE and risk estimates for member of the public entry exposure scenario.

	Radiation	Nonradiation	
Exposure Scenario	TEDE (rem/yr)	Noncancer HI	ELCR
INL visitor	7.0 E – 03	<1.0 E -02	3.0 E – 08
ICDF Complex visitor[a]	4.0 E – 02	9.0 E -02	1.0 E –07
Target levels	1.5 E – 02	1.0 E + 00	1.0 E – 04

a. Visitor exposure will be controlled to target level.

ELCR = excess lifetime cancer risk
HI = hazard index
ICDF = Idaho CERCLA Disposal Facility
INL = Idaho National Laboratory
TEDE = total effective dose equivalent

The TEDE values calculated for these exposure scenarios are based on unmitigated risk. Section 6.0 of EDF-ER-327 addresses the controls that will be implemented to ensure that visitors will be within the dose constraints.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential HI for noncancer effects is less than 1 for each nonradiation exposure scenario.

3.5.4 Summary of Risk Estimates for the General Public Exposure Scenario

The unrestricted general public exposure scenario considers exposure to a visitor located at the Highway 26 Rest Area. This unrestricted exposure scenario is a qualitative analysis based on the results of the INL visitor scenario. The INL visitor is in proximity to the ICDF Complex and shares the same source inventory and concentrations as the Highway 26 Rest Area exposed individual. The TEDE for the INL visitor is less than the radiation dose limit of 0.015 rem/yr. Since the rest area is considerably farther (5,630 m) from the ICDF landfill than the INL visitor (300 m), and exposure decreases with distance, dose estimates calculated for the INL visitor would also be considered protective of the Highway 26 Rest Area visitor.

The potential cumulative ELCR from nonradiological carcinogenic COPCs is less than the target risk level of 1×10^{-4}. The potential HI for noncancer effects is less than 1 for each nonradiation.

3.6 Groundwater

To ensure protection of groundwater, the ICDF Complex RAOs presented in the OU 3-13 ROD (DOE-ID 1999) require maintaining caps over the closed ICDF landfill to prevent the release of leachate to the underlying groundwater, which would result in exceeding a cumulative carcinogenic risk of 1×10^{-4}, a total HI of 1; or applicable State of Idaho groundwater quality standards (i.e., maximum contaminant levels [MCLs]) in the SRPA.

Operationally, the landfill limits that have been established to ensure protection of groundwater are contained in Section 5 of the ICDF Complex WAC (DOE-ID 2005a). Extensive contaminant fate and transport modeling provided the basis for developing groundwater RAO-based waste soil contaminant concentrations for the ICDF landfill. The groundwater RAOs for this activity are the MCLs promulgated under the Safe Drinking Water Act, risk-based concentrations derived from a cumulative 1×10^{-4} excess

lifetime cancer risk, and risk-based concentrations derived from an HI of 1 for noncarcinogens in the SRPA. In order to demonstrate that the RAOs for the groundwater would be met, MCL levels were set in the SRPA and concentrations were back-calculated to develop the maximum concentrations allowable in the landfill (EDF-ER-275).

The SRPA beneath the ICDF Complex has been previously contaminated from other sources at INTEC. Monitoring of the unsaturated zone, as described in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004), will be used in cooperation with the results from SRPA monitoring to determine if there has been a release from the ICDF Complex, or whether contaminant concentrations may be the result of other contamination sources.

Compliance with RAOs has already been designed through the development of the acceptable landfill WAC limits, modeled in EDF-ER-275, and presented in Section 5 of the ICDF Complex WAC (DOE-ID 2005a). The waste tracking process, described in PLN-914, will track the cumulative mass (which can be used to calculated total percentages) of contaminants in the landfill to ensure that the landfill WAC limits are maintained.

The ICDF Complex will demonstrate meeting the established groundwater RAOs by implementing the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004) and using the monitoring results to assess compliance with MCLs, cumulative 1×10^{-4} excess lifetime cancer risk, and a HI of 1 for noncarcinogens in the SRPA. Landfill performance evaluations through leakage monitoring is also presented in the Groundwater Monitoring Plan and the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b) and will help ensure compliance with the RAOs by detecting releases from the landfill at the earliest point in time. The groundwater and leak detection monitoring that will be performed to demonstrate compliance with the RAOs is further described in Section 3.9 of this O&M Plan and in *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004).

In addition to the groundwater monitoring system, a Secondary Leak Detection and Recovery System will be constructed under the primary leachate collection system of the landfill to provide an early warning of leachate breaching the liner systems in place. This will allow for more timely corrective action than would be attained by monitoring the groundwater alone.

3.7 Radiological Controls

The Radiological Control Program implemented at the ICDF Complex will be in compliance with applicable codes, standards, and DOE orders, principally 10 CFR 835. These are implemented by the *INEEL Radiological Control Manual* (Radiological Control Department 2003) and procedures comprising the Radiation Protection Manual (Radiological Control Department 2005).

It is the policy of INL and DOE-ID to conduct radiological operations in a manner that protects the health and safety of all its employees, contractors, and the general public. This objective is accomplished by ensuring that radiation exposures to workers and the public and that releases of radioactivity to the environment are maintained below regulatory limits and conscious efforts are taken to further reduce exposures and releases to be ALARA. The INL is fully committed to implementing a radiological control program of the highest quality that consistently reflects this policy.

This policy is implemented by compliance to applicable requirements, establishment of a radiation protection program and organization, an ALARA policy and program, and a radiological protection training program. It is further implemented by effective application of radiation exposure control and radiological monitoring, as well as appropriate use of radiological protection instrumentation and recordkeeping. A description of these elements is provided in the following subsections.

It is the INL management and operations (M&O) contractor's policy to conduct its radiological operations in a way that ensures the health and safety of all its employees and the public.

3.7.1 Requirements

The Radiological Control Program is derived from the following applicable codes, standards, and DOE orders, principally 10 CFR 835. These are implemented by INL policies and standards listed below:

- 10 CFR 835, "Occupational Radiation Protection" July 1999
- 40 CFR 61, "National Emission Standards for Hazardous Air Pollutants" July 1999
- DOE Order 231.1, "Environment, Safety, and Health Reporting," Change #2, November 7, 1996
- DOE Order 5400.5, "Radiation Protection of the Public and the Environment," February 1990, Change 2, January 1993
- ANSI N13.6-1966, "Practices for Occupational Radiation Exposure Records," American National Standards Institute, 1966
- ANSI N323A-1997, "Radiation Protection Instrumentation Test and Calibration," American National Standards Institute, 1997
- ANSI Z88.2-1992, "Practices for Respiratory Protection," American National Standards Institute, May 19, 1992.

3.7.2 Radiation Protection Program and Organization

Line management organizations have the overall authority and responsibility for implementing and complying with the M&O contractor's radiation protection program and for ensuring that workers are adequately protected from radiological hazards. The Environment, Safety, Health, and Quality Assurance organization has overall authority and responsibility for developing and maintaining the contractor's radiation protection program. This authority and responsibility is delegated to the Radiological Controls organization, which is directly responsible for providing program direction to the contractor (hereafter referred to as company) and their line management organizations. Dosimetry and instrumentation resources are provided by the Radiological Controls organization. Groups reporting to the local area environmental, safety and health manager provide operational radiological protection coverage to line organizations. These groups provide RCT and radiological engineer support. The RCTs, radiological engineers, and other safety professionals interface through safety and health program development, reviews of work planning documents, and job hazards analyses. Staffing levels for radiation protection personnel are determined and maintained as required by specific radiation protection needs and the need to maintain an effective radiation protection program. Day-to-day implementation and application of the ICDF Complex radiation protection program is under the direction of the RCTs assigned to the project.

Excellent performance in radiological control policy is evident when radiation exposures are maintained well below regulatory limits and contamination is minimal, radioactivity is well controlled, and radiological spills and uncontrolled releases are prevented.

3.7.3 The ALARA Policy and Program

Federal law and the DOE require the ALARA concept to be implemented in the contractor's radiological control program. This requirement is implemented through INL company policies and procedures for radiological control.

The ALARA process is an approach to radiological control that reduces and controls individual and collective radiation exposures of the workforce and the public. Management is committed in all activities to reducing any safety or health risks associated with hazardous substances, including ionizing radiation. This policy applies to the TEDE. All exposures are maintained as far below the limits set by DOE as social, technical, economic, practical, and policy considerations permit. Management is responsible for promoting ALARA awareness and for reducing and keeping radiation exposures ALARA.

Management uses the following methods to achieve ALARA objectives:

- Allocating the appropriate technical, administrative, and supervisory resources necessary.
- Appointing a system of ALARA committees to provide focus and direction for reducing radiological exposures.
- Appointing an ALARA coordinator to oversee and evaluate efforts and provide technical assistance to identify needed improvements.
- Establishing and tracking ALARA goals with consideration to the projected work scope for organizations and for individuals with consideration to their job functions.
- Aggressively pursuing those activities, concepts, and methods, including cost/benefit analyses that result in compliance with ALARA goals and objectives.
- Ensuring that preparations for high-radiological-consequence work include an evaluation of the use of equipment mockups, work area photos, videotapes, etc. to minimize the working time required in the actual radiation and contamination fields. The cost for these materials should be justified by dose-reduction benefits.

Routine dosimetry reports show organizational dose totals, which include individual employee dose totals and ALARA goals, and flag those employees projected to exceed or who have exceeded their ALARA goal. Reports and graphs are provided to facility managers for review of the ALARA status of personnel they supervise.

3.7.4 Radiological Protection Training

INL-wide policies establish the requirements to ensure that personnel have the training to work safely in and around radiological areas and to maintain their individual exposures and the exposures of others ALARA.

Visitors to INL receive training or are escorted by a fully trained and qualified employee if they enter radiological areas.

3.7.4.1 Radiological Worker and General Worker Training. The plans and procedures for radiological worker and general worker training are found in INL company policies and procedures for radiological protection. Facility management ensures that all individuals receive appropriate training in

radiological controls for their work assignments. All individuals requiring access to radiological areas receive radiological worker training, which covers facility-specific technical and practical training and stresses their responsibilities for safely working with radioactive materials. The training emphasizes the nature of radiological conditions and control of radiation exposure and follows the DOE standardized core training materials. The level of training is based on each employee's category of involvement with radiological work and meets the requirements of 10 CFR 835.901.

Personnel who may routinely enter a controlled area and may encounter radiological barriers, postings, or materials receive General Employee Radiological Training (GERT). Radworker I or II may be substituted for GERT training.

3.7.4.2 Radiological Control Personnel Training. All radiological control personnel meet the requirements and are trained according to the terms and conditions of 10 CFR 835.901 and INL company policies and procedures. The RCT qualification consists of the standardized DOE core course training material, on-the-job training per the qualification standards of INL company policies and procedures, and passing scores on both final comprehensive written examination and final oral examination board. Individuals performing duties as RCTs are retrained and qualified in accordance with DOE core course requirements every 2 years. Limited or subdivided qualifications for RCTs are issued if associated provisions are identified in the qualification program.

Each employee is trained in the principles of the Voluntary Protection Program (VPP), which is intended to motivate each employee to take the responsibility for their own safety and the safety of their fellow workers. The ultimate goal of the VPP is to create a workplace free from injury and illness. In addition, each employee is empowered with stop work authority, which allows each employee to stop any work that he or she feels is unsafe or is not proceeding according to an approved procedure.

3.7.5 Radiation Exposure Control

The following subsections discuss the methods for controlling radiation exposure.

3.7.5.1 Administrative Limits. Radiation exposure limits are based on requirements contained in Subpart C of 10 CFR 835 and INL company policies and procedures. An administrative control level (ACL) has been established for INL. For nonaccident conditions, company management must give prior written approval for doses greater than the INL ACL. The administrative limit imposed by DOE is intended to keep worker exposure less than 2 rem/yr. The DOE Headquarters management must give prior written approval for doses greater than 2 rem/yr, but a worker will not be authorized to receive an exposure greater than 5 rem/yr. In addition, radiation workers have assigned ALARA goals. The dose limits and ALARA goals are implemented in company procedures, and apply to occupational radiation dose, which excludes doses from background, therapeutic and diagnostic radiation, medical radiation, and participation as a subject in medical research programs.

3.7.5.2 Radiological Practices. The requirements of 10 CFR 835, supplemented by ACLs and ALARA goals, establish the external radiation exposure limits.

Management specifies the responsibilities and requirements necessary to ensure that exposure of employees and visitors to radiation from all sources is ALARA and, in all cases, compliant with federal requirements. Management also has the responsibility for maintaining the documentation of the facility-specific ALARA program. The documentation demonstrates compliance with 10 CFR 835.101. All controlled areas, radiological areas, and radioactive material areas are posted in compliance with 10 CFR 835, and company procedures.

Radiological areas are determined, and their boundaries marked and posted in accordance with 10 CFR 835 as implemented by company procedures. Work is controlled by use of radiological work permits (RWPs) and other approved radiological work procedures. Appropriate radiological control practices are specified in the RWP. These practices vary widely, depending on the specific circumstances.

Areas within the ICDF Complex may be designated as Radiation Areas, Contamination Areas, High Contamination Areas, Airborne Radioactivity Areas, or Radiological Buffer Areas (RBAs) as conditions warrant. These designations are generally not permanent, but are dynamic and flexible in relation to ongoing operations and changing radiological conditions. The boundaries of these areas are adjusted as needed (increased or decreased) to reflect the actual radiological conditions. Figure 3-2 depicts initial decon treatment building boundaries and instrumentation locations anticipated to support the Scope of Work. Revisions will be made as radiological conditions change. The areas will be managed by the RadCon organization, principally the RCTs assigned to the work area, in accordance with company procedures, training, knowledge, and experience.

Work in radiological areas is typically controlled using the Radiological Control Information Management System (RCIMS). The RCIMS is a network-based data storage system that builds, provides, and maintains an extensive history of job-specific details related to a given RWP and work order/ALARA task. RWPs are generated and tracked through use of RCIMS and doses are tracked on RCIMS through electronic personal dosimeters.

3.7.5.3 Dosimetry. As implemented by company procedures, 10 CFR 835 establishes the policy, requirements, and training necessary for monitoring external and internal exposures. These procedures specify implementation of the external and internal dosimetry programs.

External dosimetry includes monitoring personnel radiation exposures from sources external to the body, including personnel monitoring, area/environmental monitoring, and facility and personnel accident monitoring. External personnel monitoring includes penetrating and nonpenetrating radiation contributions to a person's whole body and extremities, as appropriate. Thermoluminescent dosimeters (TLDs) are used to monitor external exposure. Each employee entering a radiologically controlled area is responsible for wearing the assigned TLD. In addition to the TLD, electronic-integrating pocket dosimeters and/or ionization chamber direct-reading pocket dosimeters are used. The Radiological Control Organization analyzes all external dosimetry used at INL.

Individuals working at nuclear facilities are categorized by job tasks and exposure potential and those that exceed the bioassay trigger level are included in the bioassay program. Employees who are likely to receive intakes resulting in a committed effective dose equivalent greater than 100 mrem undergo initial, periodic, and termination baseline whole-body counts or bioassays as appropriate. Employees who may receive intakes resulting in a measurable committed effective dose equivalent that is less than 100 mrem in a year may also be assigned to participate in routine or special bioassay sampling under the direction of the facility internal dose coordinator.

A radiological engineer assesses the radiation dose received from internally deposited radioactive materials on the basis of any bioassay results (whole-body count or biological samples). The assessment is documented and submitted to the Dosimetry Group, which manages the bioassay program and maintains a summary of the dose equivalents received from external and internal results.

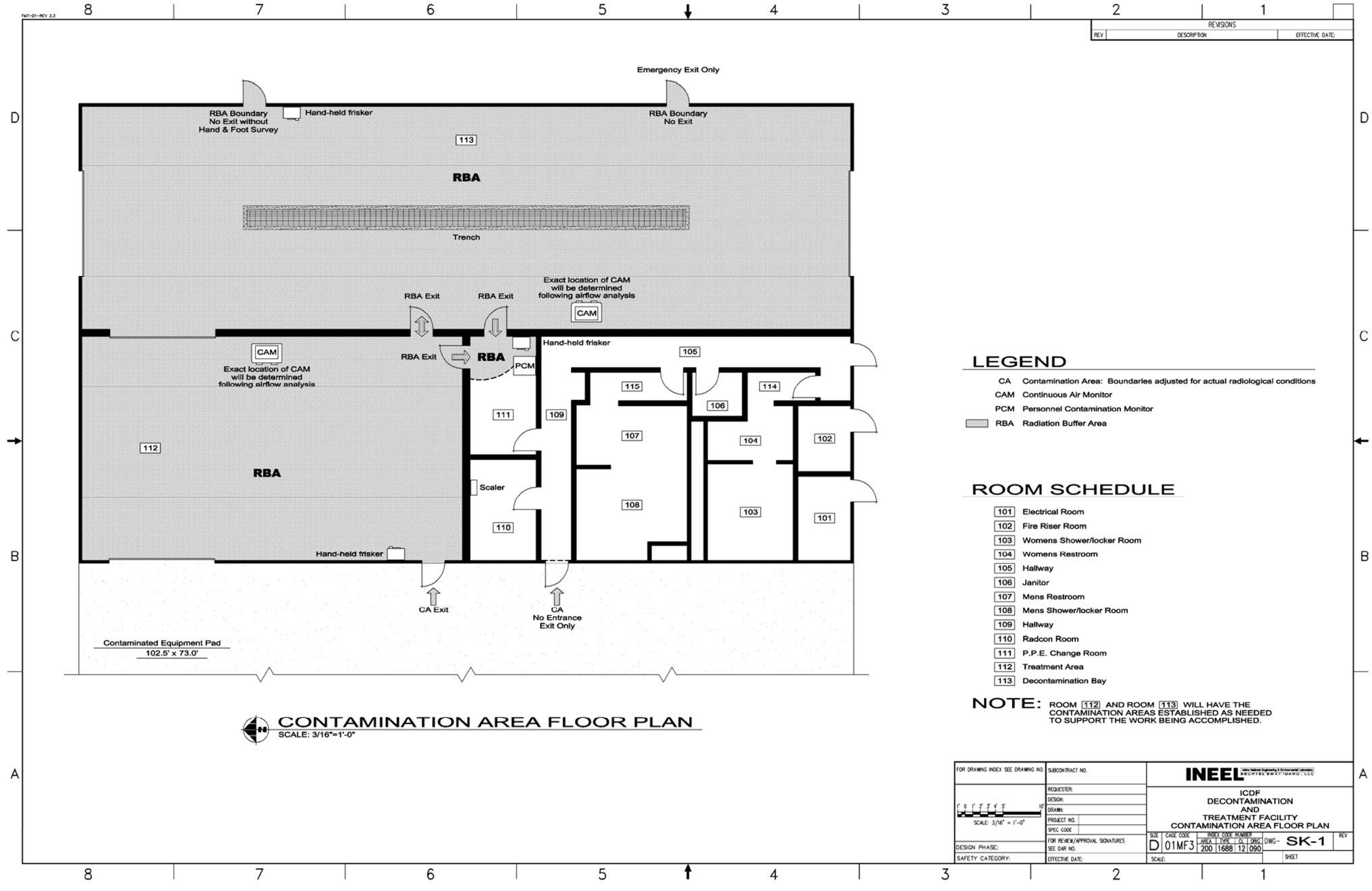


Figure 3-2. Initial decon building boundaries and instrumentation locations for ICDF operations.

3.7.5.4 Respiratory Protection. Company procedures provide guidelines for selecting respiratory protection equipment for protection against airborne radioactivity. These procedures incorporate the requirements of ANSI Z-88.2-1992, "Practices for Respiratory Protection." Respirators for radiological exposure control purposes are controlled, issued, and inspected per company procedures. All personnel who use respiratory equipment are formally trained and qualified.

3.7.6 Radiological Monitoring

As implemented by company procedures, 10 CFR 835 specifies the requirements and limits that ensure control of radiological conditions and radioactive material. Radiological monitoring and control of the conditions at facilities are performed to ensure that these limits are not exceeded.

3.7.6.1 Control of Personnel Contamination. External monitoring of the whole body for beta-gamma and/or alpha contamination is required of each person upon exit from a contamination area. Only those trained as radiation workers are permitted to monitor (frisk) themselves or others. The contamination limits, survey methods, and appropriate responses to personnel contamination are specified in 10 CFR 835, as implemented by company procedures.

Workplace monitoring is provided on both a real-time basis and through programs established to identify trends. Real-time monitoring is designed to detect and provide alarms when unusual increases in radiation or airborne radioactivity occur. The alarm alerts personnel to take immediate action to prevent or mitigate their individual exposure to the threat.

3.7.6.2 Area Airborne Radioactivity Monitoring System. The airborne radioactivity monitoring program requirements and implementing procedures are contained in company procedures. Air monitoring is performed when an individual is likely to receive an exposure of 40 or more derived air concentration (DAC) hours in a year or as necessary to characterize the airborne radioactivity hazard where respiratory protective devices for protection against airborne radionuclides have been prescribed. Continuous air monitors (CAMs) or portable air sampling equipment is utilized where persons without respiratory protection are likely to be exposed to concentrations exceeding 1 DAC or where there is a need to warn individuals of unexpected increases of airborne activities greater than 1 DAC. Company procedures contain the detailed implementation requirements of the airborne radioactivity monitoring program, including the responses to high airborne radioactivity in work areas.

3.7.7 Radiological Protection Instrumentation

Properly selected, operated, maintained, and calibrated radiological instrumentation is employed at facilities to implement an effective radiological control program. Company procedures specify the requirements for radiological instrumentation. The INL Radiological Control Manual defines the criteria for selection, design, procurement, and installation of radiological instrumentation. Company procedures provide calibration and operational check requirements.

Portable radiological control instruments are calibrated, maintained, and repaired at the INL Health Physics Instrument Laboratory. These instruments are used to identify and help control radiation, contamination, and airborne radioactivity at its source. Most of these instruments generally will be used interchangeably within various areas of the ICDF Complex. Fixed instruments are calibrated, maintained, and repaired on location using approved procedures. The following instruments are used at the various facilities, as appropriate:

- CAMs and/or portable air sampling equipment are used to monitor areas with potential for airborne radioactivity. Beta- and alpha-sensitive detectors monitor for unanticipated increases in

airborne radioactivity. CAMs or portable air samplers are required in areas that could generate airborne levels greater than 1 DAC, or where a need exists to alert potentially exposed workers to unexpected increases in the airborne radioactivity levels.

- During waste handling operations, CAMs or portable air sampling equipment will be utilized to identify and/or characterize any airborne radioactivity releases from ICDF landfill, evaporation pond, and decontamination/treatment activities. Two CAMs (with one spare) will be located in the decon building, one in the decontamination bay and one in the treatment area. Portable air sampling is the preferred air monitoring method at the landfill and evaporation ponds. Portable air sampling instruments allow greater flexibility to sample areas of concern and changing wind direction versus fixed locations for CAMs, which may not always be in the wind path. Air samples will be taken downwind of the dumping activities to monitor for any airborne releases, in accordance with company procedures. Samples will also be taken in areas out of the prevailing winds to establish background levels. These samples may be taken with either low-volume (giraffe) or high-volume (grab) air samplers.

- Personnel contamination monitors (PCMs) are used with survey stations to monitor external contamination on employees and equipment at control points near exits from RBAs.

- One PCM will be positioned in the PPE change room of the decon building for personnel to perform whole body surveys at the exit from RBAs and other radiologically controlled areas, including those individuals exiting ICDF Complex areas. A stationary Geiger-Mueller (GM) counter or scintillation survey instrument will be located in the same area to survey tools, etc. and for use when the PCM is out of service for calibration or maintenance. Portable instruments will be placed in appropriate locations within the ICDF Complex for periodic personnel and equipment surveys. All personnel signed in on an RWP are expected to perform a final exit survey when leaving the ICDF Complex.

- Portable alpha monitoring instruments are used for field survey of surfaces and personnel.

- Beta-gamma monitoring instruments, which include a variety of portable beta-gamma detectors and suitable rate meters, are used for both surface and personnel monitoring.

- Low background gas flow proportional alpha-beta counters are used to count contamination smears and air filters. Most can be programmed to automatically change samples and store the results in a computer-linked database.

- At least one proportional counter will be positioned in the RadCon room at the decon building to analyze radioactivity on smears from the ICDF Complex.

- Other specialized instruments such as neutron detectors also may be used.

3.7.7.1 Calibration and Control. Calibration and control of portable radiological instrumentation provided by the Health Physics Instrument Laboratory conforms to ANSI N323A-1997, “Radiation Protection Instrumentation Test and Calibration, Portable Survey Instruments.” The standards used for calibrating instrument functions, including electronic and flowmeter standards and radiation calibration sources, are directly or indirectly traceable to National Institute of Standards and Technology standards.

Portable instrumentation is calibrated before initial use, after maintenance or adjustment, following any modification or alteration that may affect instrument response, and at intervals not to exceed 1 year. Calibration is performed on other radiological instruments (nonportable or fixed) as required by company

and facility-specific procedures. The current calibration label, showing the date when calibration is due, is attached to portable instruments.

The calibration status (including due date) of fixed instruments and instrumentation systems is tracked.

3.7.7.2 Operational Checks. A source check is performed on portable radiological instrumentation daily or prior to use by an RCT to verify that the instruments respond properly to radiation.

Before use, each portable survey meter is visually examined for defects, current calibration dates, and battery conditions, if the instrument has a built-in battery check. Any instrument suspected of providing incorrect in-service measurements is removed from service, pending a satisfactorily passed source check or calibration. Operational checks are also performed on fixed instrumentation for proper operation, as appropriate.

Radiological instrumentation found to be defective (e.g., fails the source check) is tagged out of service to prevent inadvertent use and segregated until properly repaired, calibrated, or disposed.

3.7.7.3 Safety Precautions for Using Radiological Instrumentation. Only personnel formally trained in the use of portable radiological instrumentation are allowed to use this equipment. As a minimum, training consists of a lecture on instrument use and the meaning of its measurements, a demonstration of its proper handling, and a period of supervised use.

3.7.8 Radiological Protection Recordkeeping

Radiological protection records generated by a facility include, as a minimum, those items listed in 10 CFR 835. Inventory, survey, exposure, and air monitoring records are maintained to provide a history of radiological conditions. Records that document the appropriateness, quality, and accuracy of methods, techniques, and procedures in use during any given period are maintained per Section 6 of ANSI N-13.6, "Practices for Occupational Radiation Exposure Records Systems."

INL company policies and procedures provide direction on the development, management, and retention of records. Categories of radiological records include the following:

1. RadCon Policy Statements
2. RadCon Procedures
3. Individual Radiological Doses
4. Internal and External Dosimetry Policies and Procedures
5. Personnel Radiological Training
6. ALARA Records
7. Radiological Instrumentation Test, Repair, and Calibration Records
8. Radiological Surveys
9. Area Monitoring Dosimetry Results

10. RWPs

11. Radiological Performance Indicators and Assessments

12. Radiological Safety Analysis and Evaluation Reports

13. QA Records

14. Radiological Incident and Occurrence Reports

15. Accountability Records for Sealed Radioactive Sources

16. Records for Release of Material to Controlled Areas

17. Reports of Loss of Radioactive Material.

All radiological records are retained until DOE authorizes final disposition.

3.7.8.1 Dose Tracking. Tracking of exposures for workers is conducted in accordance with the INL Radiological Control Manual. Dosimetry reports show organizational dose totals. In addition, individual employee dose totals and ALARA goals are listed, and the names of employees who are projected to exceed, or who have exceeded, their ALARA goal are flagged.

Active employees are provided with an annual report of their dose. Upon request from a terminating employee, exposure records are provided as soon as the data are available but not later than 90 days after termination. A written estimate of the radiation dose received by the terminated employee can be provided at the time of termination if requested. Monitoring results, including zero dose, are reported to each visitor within 30 days of determining the results. Upon request, any individual may receive a current radiation dose record. Detailed information concerning any individual's exposure is available upon request by the individual, consistent with the provisions of the Privacy Act.

The INL Radiation Dosimetry Program retains official records of individual radiation doses. Individual dose records are normally retained for 75 years and will be retained as directed to support epidemiological studies. Records retained and reported are sufficient to support recalculation of doses at a later date.

3.7.8.2 Airborne Radioactivity Monitoring Records. Facilities retain airborne radioactivity monitoring records to provide a chronological historical record of the conditions under which personnel were exposed. This complies with Section 5 of ANSI N-13.6. Air monitoring records that document the appropriateness, quality, and accuracy of methods, techniques, and procedures in use during any given period are kept per Section 6 of ANSI N-13.6. Where applicable, facilities retain records per DOE requirements and RCRA permit requirements.

3.7.8.3 Annual Radiation Dose Reports. Individual occupational dose records and records used to assess individual doses are generated and maintained to provide appropriate reports to the employee and management and to comply with DOE Order 231.1. Records are readily available for all current employees.

Official records of radiation exposure doses also are retained. Dose assessment calculations and methods are retained by radiological control personnel.

Special investigations are used to estimate the dose received by an individual (external and/or internal) when the exposure cannot be determined by normal means. Investigation reports become part of the dose record. After an investigation, the responsible facility manager may determine that a critique report or occurrence report is required for further investigation and corrective action.

3.8 Action Leakage Rate

The ALR for the ICDF landfill was calculated in EDF-ER-269, "Leachate Generation Study." The calculated ALR for Cell 1 and Cell 2 of the ICDF landfill is 1,380 gal/day. The ALR for the ICDF evaporation pond is 1,590 gal/day for each pond cell. The ALR for the ICDF evaporation pond was calculated in EDF-ER-280, "Landfill Leachate Collection System Design Analysis."

During the operations of the ICDF Complex, ICDF Complex personnel must convert the weekly flow rate from the landfill LDRS and from the LDRS from each evaporation pond cell to a flow rate with the units of gal/day. These flow rates will be compared to the ALR for the landfill or the evaporation pond. Section 9 details the steps that are required if the calculated ALR is exceeded.

After the final ICDF landfill cover has been placed, ICDF Complex personnel must convert the monthly, quarterly, or semiannual flow rate from the landfill LDRS and from the LDRS from each evaporation pond cell (while they remain after closure of the landfill) to a flow rate with the units of gallons per day. Whether the conversion is performed using monthly, quarterly, or semiannual flow rates depends upon whether the previous volumes in the sumps have been below the operating levels of the pumps as described in 40 CFR 264.302. These landfill Primary Leak Detection and Recovery System (PLDRS) and the evaporation pond LDRS flow rates will be compared to the ALR for the landfill or the evaporation pond. Section 9 details the steps that are required if the calculated ALR is exceeded. Appendix A of this O&M Plan indicates that the pump will operate as long as there is sufficient head to remove leachate. Further response actions are not identified for ALR exceedence and will be determined on a case-by-case basis, in cooperation with the Agencies.

3.9 Environmental Monitoring and Recordkeeping

CERCLA determines the applicable environmental compliance requirements in the ROD through the identification of the ARARs. The ARARs that apply to the ICDF Complex appear in Section 12.2.3 of the OU 3-13 ROD (DOE-ID 1999). To demonstrate design and construction environmental compliance, a number of ARAR compliance matrices have been presented throughout the development of previous ICDF Complex technical and functional requirements (TFRs) (TFR-17 and TFR-71). Previous ARAR compliance matrices have been centered on the design and construction requirements of the ARARs. Table 3-8 presents a matrix for those ARARs involving environmental monitoring/inspection or record/reporting operational requirements. Table 3-8 indicates the specific section and/or document that demonstrates compliance with each operational monitoring/inspection or record/reporting ARAR. The ARARs that address design or construction or ARARs for operations that do not include environmental monitoring/inspection or record/reporting requirements are not included in this table. Further discussion of ARAR compliance for ICDF Complex operations is provided in Section 4.14 of this O&M Plan.

In addition to describing the operational requirements for monitoring/inspection or record/reporting, this section describes the environmental monitoring that will be performed for the ICDF Complex.

Table 3-8. ICDF Complex operational monitoring and recordkeeping requirements.

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.01.585	Rules for the control of air pollution in Idaho – hazardous air pollutants (HAPs)	Calculations will be performed using information contained in IWTS (described in PLN-914) based upon actual hazardous concentrations in waste received. Operational limits have been established for waste receipt to ensure HAPs and TAPs limits are not exceeded.	INL annual IDAPA emissions report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of the O&M Plan IDAPA Air Compliance Demonstration (EDF-2237)
IDAPA 58.01.01.586	Rules for the control of air pollution in Idaho – toxic air pollutants (TAPs)	Calculations will be performed using information contained in IWTS (described in PLN-914) based upon actual hazardous concentrations in waste received. Operational limits have been established for waste receipt to ensure HAPs and TAPs limits are not exceeded.	INL annual IDAPA emissions report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of the O&M Plan IDAPA Air Compliance Demonstration (EDF-2237)

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
40 CFR 61.92 40 CFR 61.93	NESHAP for radionuclides from DOE facilities, emission monitoring, and emission compliance	Calculations will be performed using information contained in IWTS (described in PLN-914) based upon actual radionuclide concentrations in waste received. Operational limits have been established for waste receipt to ensure NESHAP limits are not exceeded.	INL annual NESHAP report.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 3 of the O&M Plan NESHAP Compliance Demonstration (EDF-2236)
IDAPA 58.01.05.008 (40 CFR 264.14 [a], [b], [c])	Site security	Fence will be inspected to confirm it is in good repair.	Fence inspection checklists will be maintained in the ICDF Complex project records.	Section 4 of the O&M Plan Section 8 of the O&M Plan Section 10 of the O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.15 [a], [c])	General inspection requirements	Routine inspections will be performed to identify malfunctions, deterioration, operator errors, and discharges which may lead to the release of hazardous constituents or threat to human health.	General inspection checklists will be maintained in the ICDF Complex project records.	Section 8 of the O&M Plan Section 10 of the O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.92)	Groundwater protection standard	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97 (g) will be maintained in the ICDF Complex project records.	ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)
IDAPA 58.01.05.008 (40 CFR 264.93)	Hazardous constituents	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97 (g) will be maintained in the ICDF Complex project records.	ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)
IDAPA 58.01.05.008 (40 CFR 264.97)	General groundwater monitoring requirements	Groundwater monitoring as outlined in 40 CFR 264.97.	Groundwater monitoring data collected in accordance with 40 CFR 264.97 (g) will be maintained in the ICDF Complex project records.	ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)
IDAPA 58.01.05.008 (40 CFR 264.98)	Detection monitoring program	Groundwater detection monitoring as outlined in 40 CFR 264.98.	Agencies will be notified if there is an indication of statistically significant increase; compliance monitoring may be invoked.	ICDF Complex Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003c)
IDAPA 58.01.05.008 (40 CFR 264.301)	Leachate depth over the liner does not exceed 30 cm (1 ft)	Requirements for Leachate Collection Recovery System, and Leak Detection System.	No record/report required.	Section 4 of the O&M Plan Section 8 of the O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.309[a] and [b])	Surveying and recordkeeping	No monitoring/inspection required.	Must maintain an operating record, which includes a map of the exact locations and dimensions, including depth of each cell with permanently surveyed benchmarks, and the contents of each cell and the approximate location of each hazardous waste type within each cell.	Section 4 of the O&M Plan Section 10 of the O&M Plan Waste Placement Plan (EDF-ER-286) Waste Tracking Plan for the ICDF Complex (PLN-914)
IDAPA 58.01.05.008 (40 CFR 264.310[b][1] [4][5] and [6])	Closure and postclosure care	Weekly inspection of leak detection system. Continue to monitor groundwater.	Record amount of liquids after closure at least weekly. Continue recordkeeping described in groundwater monitoring plan.	Section 9 of the RAWP (DOE-ID 2005b) Section 8 of the O&M Plan ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)
IDAPA 58.01.05.008 (40 CFR 264.302)	Landfill action leakage rate	Weekly calculations of average daily flow rate for each sump.	Record of the daily average flow rate and the comparison to the ALR.	Section 3 of the O&M Plan Section 4 of the O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.553)	Temporary units	Inspections will be performed as required based upon the waste in the area.	Waste volume within the unit, entry dates of the waste.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 4 of the O&M Plan Section 5 of the O&M Plan Section 8 of the O&M Plan Section 10 of the O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.554)	Staging piles	Inspections will be performed as required based upon the waste in the area.	Waste volume within the unit, entry dates of the waste.	Waste Tracking Plan for the ICDF Complex (PLN-914) Section 4 of the O&M Plan Section 5 of the O&M Plan Section 8 of the O&M Plan Section 10 of the O&M Plan
IDAPA 58.01.05.008 (40 CFR 264 Subpart I)	Use and management of containers	Weekly inspections of storage areas and containers.	Maintain inspection checklists.	Section 8 of the O&M Plan Section 10 of the O&M Plan

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264 Subpart DD)	Containment of hazardous waste within the building Maintain primary barrier free of significant cracks, gaps or other deterioration Maintain level of stored-treated waste not to exceed the height of the containment wall Control movement out of hazardous waste out of the building Control fugitive emissions	Weekly inspection of data gathered from monitoring equipment and leak detection equipment. Inspection to certify compliance with requirements. Weekly inspection of facility's operating record. Weekly inspection of containment building and area immediately surrounding containment building for release.	Maintain record of all inspections and certifications in facility operating record. Maintain record of all repairs conducted. Record any discovery of condition that would lead to or has caused a release of hazardous waste. Notify Agencies of any release. All repairs and construction must be certified by a qualified registered professional engineer. Maintain record of waste flow-through.	Section 4 of the O&M Plan Section 8 of the O&M Plan Section 9 of the O&M Plan Section 10 of the O&M Plan Waste Tracking Plan for the ICDF Complex (PLN-914)

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.008 (40 CFR 264.221)	Surface impoundments	Leak detection monitoring system. Weekly inspections. Inspections after storms.	Sump levels and pond level readings. Certification of design and monitoring systems. Record amount of liquid removed from leak detection sump at least once each week. Calculate average daily flow rate for each sump at least weekly.	Section 4 of the O&M Plan Section 8 of the O&M Plan Section 10 of the O&M Plan
IDAPA 58.01.05.008 (40 CFR 264.552)	Corrective Action Management Units	Leak detection monitoring system. Weekly inspections. Inspections after storms.	Sump levels and pond level readings. Certification of design and monitoring systems. Record amount of liquid removed from leak detection sump at least once each week. Calculate average daily flow rate for each sump at least weekly.	Section 4 of the O&M Plan Section 8 of the O&M Plan Section 10 of the O&M Plan
IDAPA 58.01.05.008 (40 CFR 264 Subpart F)	Releases from Solid Waste Management Unit (groundwater monitoring)	Monitoring in accordance with 40 CFR 264.92, .93, .95, .97, and .98.	Records and reporting in accordance with 40 CFR 264.92, .93, .95, .97, and .98.	Section 3 of the O&M Plan ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)

Table 3-8. (continued).

ARAR	Requirement Description	Monitoring/Inspection Requirement	Record/Reporting Requirement	Compliance Demonstration
IDAPA 58.01.05.00 (40 CFR 264 Subpart G)	Closure-postclosure	Monitoring for postclosure will be in accordance with the detailed ARARs cited above.	Survey plat filed with the local zoning authority.	Section 9 of the RAWP (DOE-ID 2005b) Section 8 of the O&M Plan Section 10 of the O&M Plan

ALR = action leakage rate
ARAR = applicable or relevant and appropriate requirement
CFR = *Code of Federal Regulations*
DOE = U.S. Department of Energy
HAP = hazardous air pollutant
ICDF = Idaho CERCLA Disposal Facility
IDAPA = Idaho Administrative Procedures Act
IWTS = Integrated Waste Tracking System
NESHAP = National Emission Standards for Hazardous Air Pollutants
RAWP = Remedial Action Work Plan

The types of environmental monitoring that will be performed at the ICDF Complex to obtain data necessary to operate the ICDF Complex in compliance include the following:

- Air emissions compliance calculations (NESHAP)
- Groundwater monitoring
- Other aqueous sampling (evaporation pond, landfill Leachate Collection Recovery System, pump station)
- Evaporation pond sediment sampling.

The environmental monitoring sections below briefly describe the purpose of the various types of environmental monitoring, but direct the reader to a referenced document for additional information.

No stormwater sampling from the stormwater ditches will be performed as part of ICDF Complex operations. The good housekeeping practices that are described in this O&M Plan (e.g., keep areas free of debris, free of weeds, covering staging piles, dust control measures for waste) will help the stormwater collection ditches remain contamination-free. As a best management practice, an annual radiological survey of the accessible portions of the stormwater collection/trench system will be performed to demonstrate that the "good housekeeping" practices designed into ICDF operations are effective in controlling the spread of contamination from the facility.

3.9.1 Air

There will be no environmental air monitoring performed for the ICDF Complex to monitor NESHAP or IDAPA compliance; any air monitoring that would be performed would be to obtain health and safety data and will be conducted at the discretion of the ICDF Complex health and safety officer. Necessary radiological air monitoring for the ICDF Complex is provided in Section 3.7 of this O&M Plan.

Although evaluations demonstrate that the ICDF Complex and associated remediation operations will not contribute to emissions of toxic, hazardous, and radioactive air pollutants above regulatory limits when the operational limits described in Section 3.2 and 3.3 of this O&M Plan are implemented, calculations of emissions from the ICDF Complex will be conducted to demonstrate compliance with the applicable standards. The calculations of emissions compliance from the ICDF Complex operations for NESHAP and IDAPA will be based upon the waste inventory data contained in the waste tracking system database (described in PLN-914). These air compliance calculations will be performed to demonstrate the ICDF Complex operations are protective of human health and the environment; air compliance calculations will be conducted for toxic, hazardous, and radioactive air pollutants.

Toxic and hazardous air pollutant compliance can be calculated on a daily basis by tracking the quantity of toxic air pollutants disposed in the landfill and evaporation pond. Using the operational limit information presented in Section 3.2 and in EDF-2237, toxic and hazardous air pollutant emissions will be maintained at less than the IDAPA standards.

NESHAP compliance calculations will be conducted annually for the ICDF Complex, which will be a component of the annual INL NESHAP report. The approach for the NESHAP calculation, which is based upon tracking the quantity of radionuclides disposed in the landfill and evaporation pond, is provided in EDF-2236.

3.9.2 Groundwater

Groundwater monitoring requirements for ICDF Complex operations are in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004). The Groundwater Monitoring Plan discusses regulatory requirements and all aspects of groundwater sampling and analysis, including sample locations, frequencies, handling, analytes, quality assurance/quality control (QA/QC), and analytical techniques. The Groundwater Monitoring Plan also specifies data validation, reporting, and data and waste management.

Groundwater monitoring will be conducted for the ICDF Complex in the SRPA and in the unsaturated zone beneath the ICDF Complex to determine whether ICDF waste disposal operations have resulted in a release of contaminants to the environment beneath the landfill or evaporation pond that exceed RAOs in the SRPA. Table 3-9 provides the sampling schedule, frequency, and analyte list for groundwater monitoring of the SRPA and perched water. Perched water will only be sampled and analyzed when sufficient water exists. Table 3-9 is for the operational period of the ICDF Complex; this table may be revised sometime in the future to address groundwater monitoring for the closure and postclosure period of the ICDF Complex.

In addition to the groundwater sampling, sump sampling will be conducted to collect samples from both the LCRS sump and the SLDRS sumps. It is important to be able to detect a release from the ICDF landfill at the earliest point in time. Leachate monitoring serves this purpose by determining what contaminants exist in the landfill and can be used as a line of evidence to support determination of whether increased concentrations in groundwater are the result of a release from the ICDF landfill or another source. Because baseline sampling of the LCRS and SLDRS cannot be performed prior to construction of the ICDF landfill, sampling of these locations will begin in the first year of operation of the ICDF Complex. Samples of the SLDRS sump and LCRS sump will be analyzed for the constituents listed in Table 3-10.

Six SRPA wells will be monitored in the vicinity of the ICDF Complex, including one existing upgradient monitoring well and five new monitoring wells that were installed south of the ICDF Complex. Six new perched water wells have been installed at the locations shown in the Groundwater Monitoring Plan (DOE-ID 2004). There are up to three completions in each perched water well to add to the existing system of perched monitoring wells within WAG 3. Four rounds of background samples have been collected from the SRPA wells and from the three perched water wells that were not dry. Water levels will be checked in the perched water wells during routine monitoring of the SRPA wells. If sufficient water is available, samples will be collected in accordance with the Groundwater Monitoring Plan.

The groundwater monitoring program will continue throughout the active life of the ICDF Complex and through the ICDF Complex closure period. The active life of the ICDF Complex is estimated to continue for 10 to 15 years beginning in 2003 (although current DOE-ID initiatives may accelerate the operational schedule). The closure period for the ICDF Complex is estimated to continue 30 years past discontinuation of waste disposal at the ICDF Complex (through 2048). Monitoring of the ICDF landfill following the closure period will be conducted in coordination with the long-term monitoring of the broader INTEC facility and ROD requirements to ensure that RAOs are maintained in the SRPA beyond the year 2095.

Table 3-9. Sampling schedule and analyte list for detection monitoring in the SRPA and perched water.

Sampling Period	Sampling Frequency	Analytes
Baseline	Four independent samples	Field parameters (pH, specific conductance, and temperature)
		Appendix IX (40 CFR 264) volatile and semivolatile organic compounds (VOCs and SVOCs)
		Radionuclides (H-3, I-129, Tc-99, Sr-90, Pu-238, Pu-239/240, U-234, U-235, U-238, gamma spectroscopy)
		Appendix IX metals, filtered and unfiltered
		Major cations and anions (calcium, potassium, magnesium, sodium, nitrate, sulfate, bicarbonate, chloride)
Years one and beyond of ICDF Complex operations	Quarterly for first year; semiannual thereafter	Field parameters (as above)
		Mercury and total chromium, field-filtered
		Radionuclides (Sr-90 and Tc-99)
		Appendix IX VOCs
Years one and beyond of ICDF Complex operations	Every 2.5 years	In addition to the parameters above for semiannual:
		Appendix IX SVOCs
		Radionuclides (I-129, Pu-238, Pu-239/-240, U-234, U-235, U-238)
		Major cations and anions (as above)

ICDF = Idaho CERCLA Disposal Facility
SVOC = semivolatile organic compound
VOC = volatile organic compound

Table 3-10. Sampling schedule and analyte list for Leachate Collection Recovery System and Secondary Leak Detection and Recovery System.

Sampling Location	Sampling Media (Frequency)	Analytes
LCRS sump	Leachate (monthly)	^{129}I
		Field parameters (pH, specific conductance)
LCRS sump	Leachate (twice each year[a])	Appendix IX (40 CFR 264) volatile and semivolatile organic compounds
		Appendix IX metals plus Ca, K, Mg, Na (filtered)
		Appendix IX OC pesticides and PCBs[b]
		Appendix IX OC herbicides[b]
		Appendix IX OP pesticides[b]
		Appendix IX PCDDs/PCDFs[b]
		Radionuclides (^{3}H, ^{129}I, ^{99}Tc, ^{90}Sr, $^{239/240}Pu$, ^{238}Pu, ^{234}U, ^{235}U, ^{238}U, gamma spectroscopy)
		Major anions (nitrate, sulfate, bicarbonate, chloride)
		Field parameters (pH, specific conductance, and temperature)
SLDRS	Liquid (semiannual)	Specific conductivity

a. Sampling frequency increased to four times each year when action limit from Table 2 in the ICDF Complex Operational and Monitoring Sampling and Analysis Plan (DOE-ID 2003b) is exceeded for any constituent.

b. Analyses will be performed for only those analytes known to have been disposed to the landfill or evaporation pond.

LCRS = leachate collection recovery system
PCDD = polychlorinated dibenzo-p-dioxin
PCDF = polychlorinated dibenzofuran
OC = organochlorine
OP = organophosphorus

3.9.3 Other Aqueous Sampling and Evaporation Pond Sediment Sampling

In addition to the LCRS sampling described above, the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b) addresses the collection of environmental data to determine whether the concentration of specific constituents present in the water and sediment in the evaporation pond meets the concentration-based evaporation pond WAC for these constituents. The evaporation pond WAC provide the basis for the limiting concentrations of radioactive and nonradioactive constituents that may be present in the aqueous wastes in the evaporation pond. Compliance with the evaporation pond WAC, defined in Section 6 of the ICDF Complex WAC (DOE-ID 2005a), will ensure protection of human health and the environment. Liquid and sediment samples collected from the evaporation pond will be used to compare to the evaporation pond WAC,

used as an assessment of operations, and will provide supplementary data for leak evaluation programs. The environmental data collected from the evaporation pond liquid also will be used to support the annual NESHAP compliance calculations for the ICDF Complex. Evaporation pond water and sediments will be sampled and analyzed annually for arsenic, selenium, vanadium, and zinc to address ecological issues described in Section 3.4 of this O&M Plan. Evaporation pond water will be sampled annually to determine whether the concentrations exceed the operational limits established to ensure compliance with IDAPA 58.01.01.585 and 58.01.01.586 requirements for the toxic air pollutants. Details of the evaporation pond sampling are contained in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b).

The *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b) addresses landfill leachate sampling that will be performed for the LCRS. The LCRS will be sampled twice each year for the same baseline constituents that will be sampled in the SRPA and monthly for key indicator parameters (see Table 3-10 above). These data will be used as QA that the total contaminant mass disposed to the landfill produces leachate that poses an acceptable risk to the SRPA. The LCRS data will be used to assess and predict performance of the landfill and may be used in determination of worker safety issues for operations and maintenance (e.g., any potential worker exposure issues that may arise in the crest pad buildings). These data will be used to develop the annual Material Profile required by ICDF Complex WAC (DOE-ID 2005a). In addition, these data will be used to identify signature constituents in the leachate. Details of these sampling data needs are provided in *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b).

The *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b) also describes the sampling of the treatment unit sump to assess the contribution of the sump to the overall evaporation pond concentrations.

3.10 Sampling and Analysis/Sampling Quality Assurance

There are four Sampling and Analysis Plans (SAPs) for the ICDF Complex, each concerning different operational and/or compliance areas. These four SAPs address the collection of data of known quality as required by the EPA and DEQ for ICDF Complex operations.

3.10.1 Operational and Monitoring Sampling and Analysis Plan

The *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b) describes the ICDF Complex periodic sampling of the landfill leachate via the LCRS, evaporation pond water and sediment, and the pump station (near the decon building). These data are used to assess/predict the performance of the landfill (including QA of the waste disposed to the landfill), as well as in determination of worker safety issues for operations and maintenance. The data will be used to track waste inventory in accordance with the ICDF Complex WAC (DOE-ID 2005a) and to monitor contaminant concentrations relative to operational limits. In addition, these data also will be used for routine monitoring for worker exposure risk, for performing NESHAP calculations, and for monitoring ecological COPCs.

3.10.2 ICDF Groundwater Monitoring Plan

ICDF Groundwater Monitoring Plan (DOE-ID 2004) includes monitoring of the detection system installed in the SRPA. Samples will be collected from the groundwater monitoring wells to monitor releases from the ICDF landfill and evaporation pond. The ICDF detection monitoring program will use either prediction intervals as allowed in 40 CFR 264.97(h)(3) or control charts as allowed in 40 CFR 264.97(h)(4) to evaluate the groundwater monitoring data for statistically significant evidence

of contamination. The specific method to be used for each constituent will be determined from the results of the background sampling and existing literature on constituent distributions.

3.10.3 Waste Verification Sampling and Analysis Plan

The *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2005c) defines the verification sampling and analysis required for various types of wastes destined for the ICDF Complex for soil wastes disposed in the landfill. Verification sampling and analysis of the waste is the independent confirmation that the wastes are within the applicable Material Profile and below the associated WAC.

3.10.4 Sampling and Analysis Plan for SSSTF Waste Stabilization Operations

The objective of the *Sampling and Analysis Plan for SSSTF Waste Stabilization Operations* (DOE-ID 2003d) is to ensure that all stabilized soils meet "Alternative LDR Treatment Standards for Contaminated Soils" (40 CFR 268.49) prior to disposal in the ICDF landfill. Two sampling and analysis tasks are described in this SAP, based on the treatment unit operational practices and data requirements for the stabilization of waste soil. Samples of stabilized soil from treatability studies will be collected and analyzed to verify the stabilization mixture and process prior to waste delivery to the treatment unit. Sampling and analysis of the stabilized soils also will be conducted using the sampling frequency in the plan for the batches of soil following treatment to confirm the results of the stabilization process.

3.10.5 Quality Assurance

The four SAPs were prepared in accordance with the *Quality Assurance Project Plan for Waste Area Groups 1, 2, 3, 4, 5, 6, 7, 10, and Inactive Sites* (DOE-ID 2004). The Quality Assurance Project Plan (QAPjP) meets EPA requirements for project QA and quality control, which include the standard laboratory analytical methods used for sample analysis, and field collection methods including sample-holding times, sample sizes, and preservation.

The SAP development employed the data quality objective (DQO) process, a systematic planning tool developed by EPA for establishing criteria for data quality and for developing data collection designs. The seven iterative steps of the DQO process yield a set of principal study questions and decision statements that must be answered to address a primary problem statement. For the SAPs, the process ultimately facilitated the development of sampling designs that will allow decisions to be made within specified decision error limits.

4. ICDF COMPLEX OPERATIONS

This section addresses operation of the ICDF Complex. It is subdivided into 14 relevant areas such as waste tracking, predisposal and landfill operations, evaporation pond and leachate management, startup testing, and emergency response.

4.1 Waste Tracking

Waste tracking includes submitting and accepting waste into ICDF; waste packaging, shipment, and receipt; tracking inventory and compliance limits; and reporting and corrective action.

4.1.1 Introduction

Waste will be tracked at the ICDF Complex using the INL Integrated Waste Tracking System (IWTS). The IWTS is used across INL to track hazardous, low-level, and mixed low-level waste. The system is a replicated client-server application distributed on numerous servers across INL. IWTS will be used at the ICDF Complex to track: (1) wastes entering the Complex, (2) treatment (e.g., microencapsulation, stabilization, repackaging), (3) disposal (e.g., landfill, evaporation ponds), (4) generation (e.g., PPE, contaminated maintenance waste, decontamination waste), and (5) off-Site shipment (e.g., Envirocare of Utah). This will ensure that complete, generation-to-disposition tracking of waste is performed. IWTS provides documentation regarding source, waste characterization, and hazardous and radioactive constituents. Tracking of waste destined for disposal at the ICDF Complex will begin at the ICDF Complex user's dig site and end with final disposition (e.g., disposal, off-Site shipment). A detailed description of the waste tracking process and the IWTS is provided in Appendix C, "ICDF Complex Waste Tracking Plan" (PLN-914) of the RAWP (DOE-ID 2005b). An overview of the waste tracking process is provided in Figure 4-1.

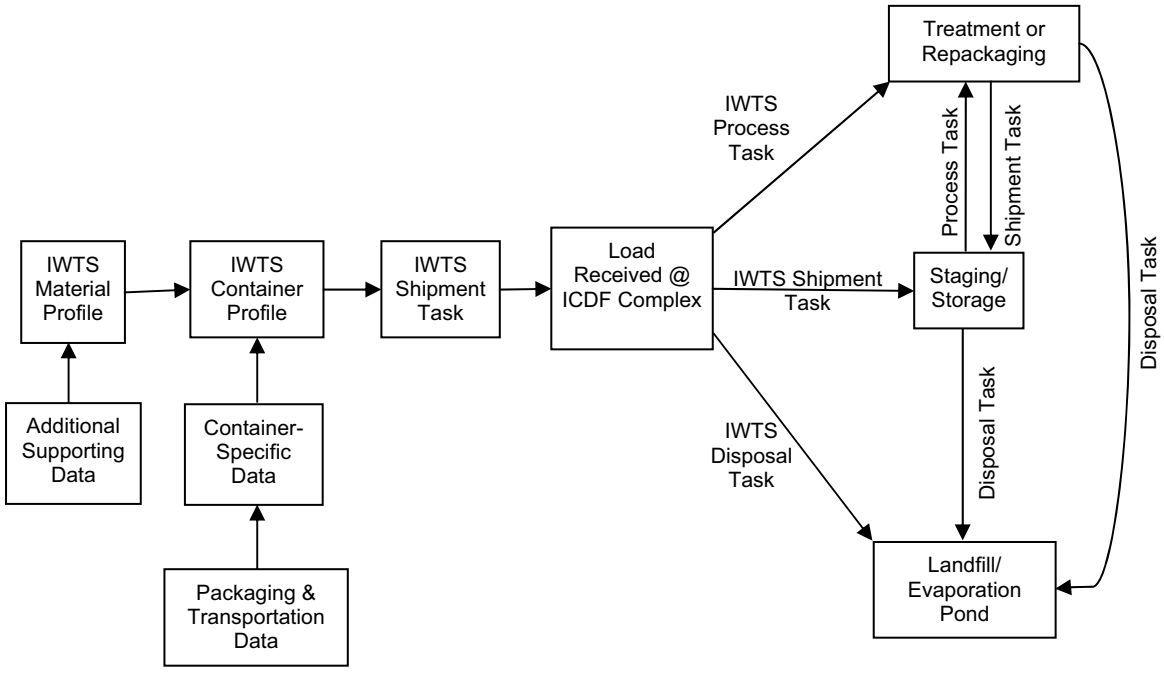


Figure 4-1. ICDF Complex waste tracking process.

Two specific applicable or relevant and appropriate requirements (ARARs) in the OU 3-13 ROD (DOE-ID 1999) deal with waste tracking (i.e., recordkeeping and surveying requirements) (items (a) and (b) below) (from 40 CFR).

40 CFR §264.309 – The owner or operator of a landfill must maintain the following items in the operating record required under 40 CFR §264.73: (a) on a map, the exact location and dimensions, including depth of each cell with respect to permanently surveyed benchmarks; and (b) The contents of each cell and the approximate location of each type of hazardous waste.

IWTS will be used in conjunction with Geographic Information System (GIS) services to generate a 3-D grid map, which will show disposition of each load in relationship to the permanent bench marks.

4.1.2 Initiation of Waste into the ICDF

Characterization of all waste submitted for acceptance into the ICDF Complex is the responsibility of the ICDF Complex users. The ICDF Complex user may use either acceptable knowledge or sampling and analysis to characterize waste. Acceptable knowledge includes both historical data and process knowledge (DOE-ID 2005c). If process knowledge is used rather than (or in addition to) sampling and analysis, documentation must be provided to demonstrate that the information is sufficient to accurately and completely characterize the waste stream.

Before waste is accepted into the ICDF Complex, an IWTS Material Profile must be completed by the ICDF Complex user and provided to the ICDF Complex management. In addition, the waste must be on the ICDF Complex schedule.

All ICDF Complex users must provide long-term and operational project schedules to ICDF Complex management and operations for planning purposes. Information necessary for the long-term schedules, includes, at a minimum, the estimated start date, completion date, waste volume, general class of waste, primary waste forms, and any anticipated need for treatment at the ICDF Complex.

4.1.3 Waste Acceptance into the ICDF

The ICDF Complex user completes an IWTS Material Profile for each waste stream. The Material Profile documents all chemical, radiological, and physical characteristics of a waste stream. IWTS automatically assigns the Material Profile a unique identification number, beginning the process of electronic tracking of the waste.

The ICDF Complex facility manager or his designated alternate reviews the Material Profile and electronically accepts or rejects the waste stream. Once the Material Profile has been approved by ICDF Complex management, the ICDF Complex user has approval to send the waste to the ICDF Complex.

An IWTS Container Profile is used to track individual containers of waste belonging to a waste stream identified by, and electronically tied to, the Material Profile. A container in IWTS is defined as a parcel of waste with a defined volume and weight, such as a box, roll-on/roll-off, dump truck, or drum. The Container Profile identifies all chemical, radiological, and physical characteristics for each container. These characteristics are entered as specific values bounded by the maximum/minimum ranges of the associated Material Profile.

The ICDF Complex user completes a Container Profile for each container of waste to be shipped to the ICDF. A unique barcode number is manually applied to the container and used as the identifier when the corresponding Container Profile is created in IWTS. This barcode number identifies the physical

container and electronically ties it to the appropriate Container Profile. After both the Material and Container Profiles are approved, the waste will be assigned a date for shipment to the ICDF Complex.

4.1.4 Waste Packaging and Shipment

The ICDF Complex user is required to properly package, mark, and label their waste per the appropriate set of ICDF Complex WAC (DOE-ID 2005a) and DOT requirements (if applicable). In addition, the user is responsible for prearranging the delivery time and date of all waste shipped to the ICDF Complex. The unique barcode number assigned to the container when the Container Profile was created is applied at the time of packaging. All waste packaged for shipment to the ICDF Complex will be visually inspected by ICDF personnel before shipment to ensure (1) that the waste matches the approved Material and Container Profiles, (2) that the waste does not contain prohibited material (e.g., free liquids), (3) that void space requirements are met (if applicable), and (4) that the containers are compatible with waste contents.

Prior to shipping, the ICDF Complex user completes an IWTS Shipment Task. The container barcode numbers, shipping date and time, originating facility, receiving unit, certification/approval, and other container and shipment-specific information are entered on the IWTS Shipment Task. Before the physical shipment leaves the ICDF Complex user's site, necessary updates (e.g., shipment date and time) to the Shipment Task are input, and the "Execute send" portion of the Shipment Task is completed. In addition, the individual OWTFs are printed for each container on the Shipment Task. OWTFs accompany each container to the ICDF Complex and are turned over to ICDF Complex personnel along with the container.

4.1.5 Waste Receipt

Upon arrival at the ICDF Complex, the electronic documentation (e.g., IWTS Material Profile, Container Profiles, Shipment Task) and paperwork (e.g., OWTF, Universal Hazardous Waste Manifest, Bill of Lading) accompanying each shipment of waste will be checked, as a minimum, for the correct Material Profile number, correct Container Profile numbers, designated number of containers, volume/weight of the waste, adequacy of shipping documentation, and appropriate marking and labeling of containers. Additional verification will be performed on a random basis, as determined by the ICDF quality assurance officer. The vehicle is weighed, and the gross weight is recorded on the OWTF.

After the shipment has been receipt-inspected, ICDF Complex personnel sign off on the OWTF as shipment accepted, and electronically accept the waste by completing the "shipment received" portion of the IWTS Shipment Task.

4.1.6 Waste Designation

The shipment is considered received at the ICDF Complex when the load has been receipt-inspected and the proper documentation allows for acceptance of the shipment. At this time, ICDF Complex personnel complete the "shipment received" portion of the IWTS Shipment Task. Once the waste is accepted, various IWTS tasks (e.g., shipment, process, and disposal) are created to electronically transfer and track the waste, depending on whether the waste will be stored, staged, treated, repackaged, or direct disposed. An IWTS Shipment Task will be used to transfer the waste to a staging or storage area. A Disposal Task will be used to transfer waste to the landfill or evaporation pond for direct disposal, and a Processing Task will be used to transfer waste being treated or repackaged. More detailed information on how the tasks are used for waste tracking is provided below and in Appendix C of the RAWP (DOE-ID 2005b).

4.1.6.1 Waste Staging and Storage. Waste arriving at the ICDF Complex may be staged or stored for a variety of reasons, such as awaiting treatment. The Staging and Storage Annex (SSA) is currently storing CERCLA waste awaiting treatment or disposal at the ICDF Complex. A detailed description of the ICDF Complex's staging and storage areas is provided in Section 5 of this document.

An IWTS Shipment Task will be used to electronically move the waste from receiving into the appropriate storage unit. Upon physical receipt of the shipment, specific locations will be assigned to each container and noted on the OWTF. The locations are documented in IWTS, ensuring precise tracking of waste containers within the storage area.

The ICDF Complex contains several staging areas. An IWTS Shipment Task will be used to electronically move waste from receiving into one of these staging areas. The process is the same as described above, except the receiving unit will be a staging area.

4.1.6.2 Waste Disposal. An ICDF Waste Generator Services (WGS) representative will be present at the dig site to ensure waste being packaged for the ICDF is WAC-compliant (e.g., no free liquids, void space requirements are met) and congruent with the corresponding IWTS Material Profile that was reviewed and approved by ICDF personnel. Technical procedures will be developed as part of the O&M Manual that will guide this activity. Free liquid verification procedures are in the ICDF Complex Waste Profile and Verification Sample Guidance (DOE-ID 2005c).

If the waste meets the ICDF landfill WAC, the waste may be taken from the receiving area directly to the landfill for disposal. An IWTS Disposal Task will be used to track waste being disposed at the landfill. Disposal of waste that has first been stored, staged, or treated at the ICDF Complex follows the same tracking process. The only difference is that the originating facility for the IWTS Disposal Task will be the storage, staging, or treatment unit from where the waste came. The OWTF will accompany the waste to the landfill, and the specific grid where the waste is placed will be noted on the OWTF. This information will be added to the IWTS Disposal Task before completion, ensuring that the precise disposal grid coordinate for the waste within the landfill is documented.

Aqueous waste that meets the evaporation pond WAC may be sent directly to the pond for disposition. An IWTS Disposal Task will be used to electronically move the waste from the receiving area into the evaporation pond. The process is the same as described above for the landfill, except the disposal unit will be the evaporation pond. The cell where the waste is placed will be noted on the OWTF for entry into IWTS, similar to the landfill grids.

If a waste is being sent off-Site, a Shipment Task will be created and executed to track the waste to the appropriate off-Site facility.

4.1.6.3 Waste Processing. Upon receipt, waste may be processed at an ICDF Complex treatment unit. Processing options at the ICDF Complex include either stabilization, debris treatment, or repackaging. Waste not meeting the landfill or evaporation pond WAC may be sent to a treatment unit if it meets the treatment unit's WAC (Section 7 of the ICDF Complex WAC [DOE-ID 2005a]). An IWTS Process Task will be used to electronically transfer waste (e.g., constituents and associated quantities) and any regulatory designations (e.g., EPA codes, underlying hazardous constituents) from an original container into a receiving/destination container. When treatment of the waste is completed, a Shipment Task will be used if the receiving/destination container is to be placed into storage; and a Disposal Task will be used if the receiving/destination container is to be sent to the landfill.

Waste being shipped to an off-Site treatment, storage, and disposal facility may require repackaging into containers that meet DOT packaging requirements or the off-Site WAC. Waste may be removed from its original container and placed in an appropriate new container, or the original container may be over-packed into a new container. This work will be conducted in the decontamination building and may be performed in either the treatment area or decontamination bay. An IWTS Process Task will be used to track waste being repacked.

4.1.7 Inventory Tracking and Compliance Limits

Inventory histories for all ICDF storage, staging, treatment, and disposal locations will be used to provide real-time data on the current inventory and ensure compliance with facility limits (e.g., operational, WAC). Location-specific inventories are maintained by physical properties (e.g., individual container ID #, total container count, total volume and weight), radiological properties (e.g., fissile material, individual radionuclides and activities), and chemical properties (e.g., constituents and amounts). Accurate inventory tracking relies on the timely creation and completion of transactions (e.g., Shipment and Disposal Tasks).

Numerous compliance checks (e.g., physical, radiological, chemical, operational and other) have been built into the IWTS. "Physical Inventory" checks include gross and net weight, gross and net volume, and container count. "Radiological Inventory" checks include fissile material, reportable quantities, less than DOE category III, and user-defined nuclides. "Chemical and Other Inventory" checks include threshold quantities, threshold planning quantities, reportable quantities, flammable material, and user-defined materials. "Operational Inventory" checks include LDRs, IDAPA, NESHAP, groundwater contaminants of concern (COCs), and TRU radionuclide concentration. Limit compliance reports have been prepared for each of the limits identified above and are available for the various locations at the ICDF Complex. Limit evaluations are electronically stored for each task and provide objective evidence demonstrating limit compliance.

4.1.8 Reporting

IWTS contains many standardized reports accessed directly in the software. These reports deal with the day-to-day operations of the ICDF Complex, such as inventories, limit compliance, and process and disposal activities for specified locations. Other reports, such as regulatory-driven or management-level reports, are obtained through Microsoft Access or web-based applications. Section 9.2.2, "Nongroundwater Monitoring Data Submittals and Notifications," of this document describes required reports for the ICDF Complex that may be supported by IWTS data.

4.1.9 Corrective Action

Noncompliant waste received at the ICDF Complex will require appropriate resolution before waste acceptance. Resolution alternatives may include, but are not limited to, correction of the noncompliant condition at the ICDF Complex, conditional acceptance of the waste at the ICDF Complex, temporarily (e.g., not to exceed 10 working days) placing the waste in the truck holding area until resolution of the issue, or returning waste to the generating WAG. A waste specialist will be contacted prior to returning waste to the generating WAG to ensure all regulatory issues are appropriately considered.

If, upon receipt inspection of the shipment, documentation is incomplete or incorrect, the waste will be moved to the truck holding area inside the ICDF Complex fence pending resolution. The waste may be held in this area (not to exceed 10 working days) before being sent to a compliant staging or storage unit, or returned to the generating WAG.

ICDF Complex management will work with the generating WAG to resolve noncompliant conditions in a timely manner. Resolution may include contacting the generating WAG to correct discrepancies on the Material Profile, obtaining more information, correcting mislabeling, etc. In addition to immediate resolution of the noncompliant conditions, further steps will be taken to determine the underlying cause of the problem and implement corrective actions as necessary to prevent reoccurrence. Reoccurrence of noncompliant shipments from a generating WAG may result in rejection of the Material Profile and termination of shipments until the issues have been resolved.

4.1.10 Records Management

All records will be kept on file at the ICDF Complex as outlined in the *Federal Facility Agreement and Consent Order for the Idaho National Engineering Laboratory* (FFA/CO) (DOE-ID 1991), pending turnover to the Idaho Cleanup Project (ICP) contractor. Records will be periodically turned over to the ICP Contractor for input into the contractor's document management system. This will relieve the ICDF operating contractor of the need for extensive records storage facilities. The records and documents that will be kept and maintained include IWTS Material and Container Profiles and supporting documentation, map/cell locations of wastes, shipping documentation, inspection records, tank records, groundwater monitoring data, environmental compliance monitoring data, and asbestos-TSCA waste records. Detailed information on the ICDF Complex records management system, including a complete list of documents to be kept, is provided in Section 10 of this document.

4.2 Waste Loading and Transportation Requirements

This section pertains to waste loading and transportation requirements within the confines of the ICDF Complex. Before loading containerized waste, the container will be inspected to ensure that it is in good condition with no visible cracks, holes, bulges, substantial corrosion, or other damage that could compromise integrity of the container. If a dump truck or roll-on roll-off is used, a liner will be installed to prevent the release of hazardous constituents and to prevent contamination of the bed or container. Alternatively, when the shipment will not traverse public roads, the bed of the truck or container may be sealed to prevent contamination spread during shipment and the truck/container decontaminated after completion of the remediation.

ICDF Complex health and safety procedures for handling containers shall be invoked, and appropriate slings and lifting devices shall be used for packages loaded with a crane. Waste containers will be loaded so that containers holding incompatible wastes are separated by the proper means. During loading and transportation, containers will remain closed, unless it is necessary to remove or add waste from the container.

Containers shall not be handled in a manner that will cause leakage. If a container is breached during loading or transportation, appropriate spill control measures will be invoked, and waste will be transferred from a leaking container to a container with good integrity.

When loading containers other than roll-on/roll-off boxes, the containers must be configured on the transport vehicle for safe unloading by a forklift or crane (if using roll-on/roll-off boxes, the box will already be placed on the transport vehicle prior to arrival at the remediation site). Once containers are loaded, the load will be inspected to ensure that container markings are clearly visible and display the estimated gross weight.

The OWTF will be transported with the load to the appropriate location, and the location will be recorded.

For more information, see Overview 4.2 in Appendix A of this document.

4.3 Predisposal Operations

4.3.1 Waste Receiving and Inspection

Waste received at the gate will be verified through a combination of inspections of the incoming shipment and cross-checks against the Material Profile. The minimum number of checks will include the Material Profile number, number of containers, and types and labeling of containers.

Depending on the amount and type of characterization data provided by the generator, verification samples may be taken at the dig site per the *IDCF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2005c). The purpose of these samples is to ensure waste is within the Material Profile and ultimately the WAC and to ensure the waste is as expected (i.e., no new contaminants are identified).

4.3.2 Waste Stabilization/Treatment

The process for soil stabilization is shown as a general schematic in Figure 4-2. A complete design was submitted in the SSSTF RD/CWP (DOE-ID 2002b) and, if necessary, this document (the O&M Plan) will be revised. The treatment process is designed to treat contaminated soil and aqueous liquids/sludges. These CERCLA wastes with RCRA metals as contaminates of concern will be stabilized using a treatment recipe derived from treatability studies. The object of stabilization is to produce a treated soil to meet the following criteria:

- Reduce the heavy metal leachability to LDR/UTS levels to meet the IDCF landfill WAC
- Exhibit no free liquid
- Exhibit a friable or crumbly consistency to allow easier posttreatment handling of the waste.

The process schematic identifies the main components of the stabilization process and shows how these components are connected. The key components of the process include the vertical lift tipper, the mixer unit, bulk bag unloader, catch container, and baghouse/HEPA filter. The information presented below provides a brief description of the soil stabilization process and key components.

- Vertical lift tipper (e.g., National Bulk Equipment, Inc. model 21-800)—Waste soil contained in engineered boxes (typically 4 × 4 × 8 or 2 × 4 × 8) will be loaded onto the vertical lift tipper assembly. The tipper is equipped with a screen to separate out > 6-in. material. The tipper will raise the box and invert it 180 degrees to dump the soil into the mixer. Successive dumping operations may be required to release most of the soil depending on soil type and moisture content.
- Mixer unit (e.g., Besser Mixing Technology MSO 3700 Twin Shaft Gemini)—Once the soil is loaded into the mixer, an operator adds the treatment reagents based on the weight of the soil and the specific treatment recipe. The treatment recipe will vary depending on the contaminants being treated and the soil types. Reagents may be added by hand through ports in the mixer, pumped in through ports in the top of the mixer, or added using the bulk bag unloader. Mixing and reaction times are determined by the treatment recipe. The mixer is a very efficient twin-shaft counter-rotating mixer that can achieve homogeneous mixtures in only a few minutes. The efficiency of the mixer ensures that the entire volume of soil is exposed to the treatment chemicals to achieve effective treatment.

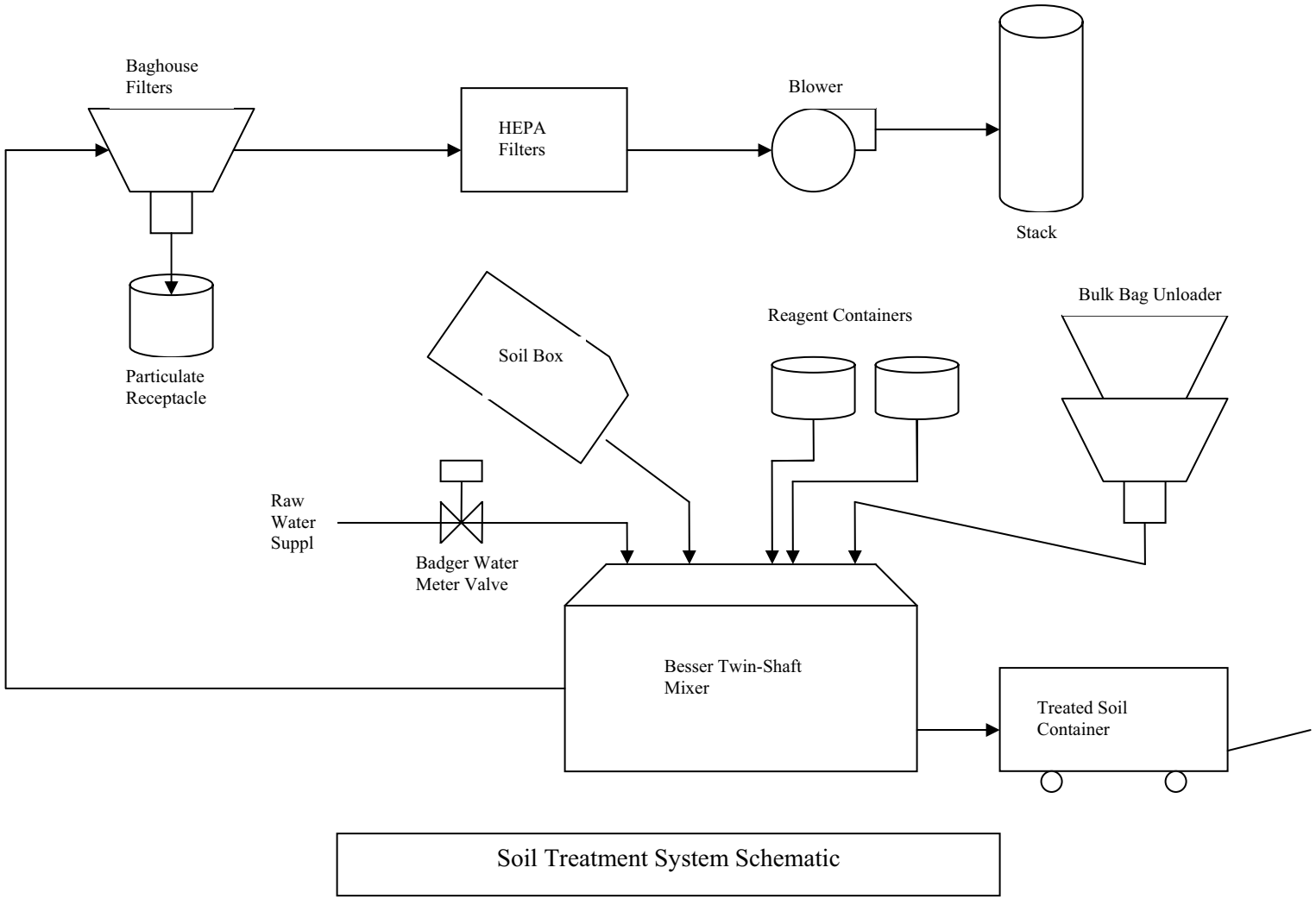


Figure 4-2. Process schematic for soil treatment.

- Catch container—After the treatment is completed, the batch is discharged into a catch container through a bottom-mounted discharge gate. The discharge gate is then closed, and the catch container is removed and replaced with another empty catch container in preparation for the next batch.

- Baghouse (e.g., Bessser Model 60-7000A)—Dust generation will be controlled by a dual-stage control system consisting of a baghouse (first stage) followed by HEPA filtration system (second stage). The ventilation points for the process are located at the key points where dust will be generated: at the soil box discharge to the mixer, at the reagent discharge to the mixer, and at the mixer discharge to the roll-on/roll-off. Dust collected by the baghouse will be injected into the mixer and treated with a subsequent batch of soil. Baghouse dust collection and injection will be conducted in a closed system to minimize worker exposure and release of contaminated dust.

Treatment of liquids/sludges will occur by adding the liquids/sludges to waste soil in the mixer unit. Bulk loads of waste liquids/sludges will be transferred from bulk transport containers to an operations tank located at the treatment unit. The liquids/sludges will be added to the mixer unit by way of a stand- alone transfer pump and pipe assembly. The quantity to be added to the waste soil will be determined by treatability studies or batch treatment operations. The goal is to add a low quantity of liquid or sludge so there will be no detrimental effect on the treatment formulation for the soil.

Treated soil will be sampled according to the *Sampling Analysis Plan for SSSTF Waste Stabilization Operations* (DOE-ID 2003d) to ensure the soil meets the land disposal restrictions and free liquids rule prior to being sent to the landfill for disposal. The material removed by the screen will be collected in a debris box and processed through the debris treatment process described in Section 4.3.5. Whenever the waste stabilization treatment process is employed, the final matrix will carry all appropriate waste codes and be sampled/analyzed to ensure the applicable 40 CFR 268 standards are met.

4.3.3 Waste Storage

Waste requiring storage pending treatment and/or disposal will be placed in specified areas at the ICDF Complex. Containers holding incompatible wastes will be separated by proper means and containers will remain closed unless it is necessary to remove or add waste to the container. Weekly inspections and inspections after a significant storm event will be performed and documented for storage areas containing waste. A significant storm event is defined as 0.85 in. of rain in a 24-hour period and/or sustained winds greater than 35 mph, as measured at the Central Facilities Area (CFA) National Oceanic and Atmospheric Administration (NOAA) station. Appropriate spill control measures will be invoked when a container has been breached, and spill notifications and paperwork will be completed, as required. Appendix A contains detailed container inspection and storage requirements.

4.3.4 Waste Staging

Waste staging will be used to facilitate the operation of the ICDF Complex. Waste staging refers to temporary holding of remediation waste with an immediate intent of processing. Remediation waste may be staged while pending treatment, repackaging, testing, and/or disposal while remediation of other waste proceeds. This is anticipated to improve the efficiency of remediation of INL CERCLA sites.

Staged wastes may be in containers, tanks, or storage piles, though only solid nonflowing waste will be placed in stockpiles. The ICDF Complex contains several staging areas, each with a specific purpose or activity as discussed in Section 5. Wastes may be staged either in bulk or containers depending on material and origination. Remediation wastes from within the AOC may be staged in containers or stockpiles. Containerized and stockpiled remediation waste in staging areas will be managed to meet the

standards and operational requirements described in Section 5. Verification of compliance to Section 5 will be performed through routine inspections of staging areas.

4.3.5 Debris Treatment

Treatment of hazardous debris subject to the "Treatment Standards for Hazardous Debris" (40 CFR 268.45) will occur at the decon building. All debris entering the treatment process must meet the definition of debris in 40 CFR 268.2 (g). Portland-cement-based microencapsulation was selected as the debris treatment process as described in EDF-1730 in DOE/ID-10889 (DOE-ID 2002d). This process is an EPA-approved alternative treatment technology listed at 40 CFR 268.45. Microencapsulation encases the hazardous debris in inorganic materials (Portland cement) to substantially reduce the surface exposure to potential leaching media. This treatment process will be performed in a nonintrusive manner to reduce exposure potential to those workers conducting the treatment. The components to the debris treatment process are the grout hopper/reservoir, positive displacement pump, hose, and box brace. Debris treatment equipment is portable and will be used in either the treatment area or decon bay of the decon building.

Portland-cement-based grout will be used for microencapsulation of the hazardous debris. A flowable grout is needed in order to fill debris boxes without removal of the box lids or handling of the debris. Properties of grout considered during the selection phase included the following:

- Low quantities of bleed water as setting occurs
- Low shrinkage to minimize cracks and voids
- Adequate strength to minimize potential for cracks during box handling
- Low unit weight in order to minimize the box weight.

Table 4-1 describes the grout mixtures that have been selected. Mix No. 1 does not include sand. It is very flowable but will have more potential for bleed water, shrinkage, and shrinkage cracks. It has been used for previous projects and its properties are fairly well understood.

Mix No. 2 contains pumice sand. It has better properties but is less flowable. The mix design is only a starting point for trial mixes. No testing has been performed to verify that the material proportions are appropriate. Tests will be required prior to use of Mix No. 2.

Table 4-1. Grout mixes for the debris treatment process.

	Estimated Batch Weights	
Material	Mix No. 1	Mix No. 2
Water	800 lb (96 gal)	433 lb (52 gal)
Cement (Type I/II)	680 lb	320 lb
Fly ash	1,600 lb	640 lb
Pumice sand	None	1,400 lb
High-range water reducer	Approx. 6 lb	Approx. 8 lb

The quantity of water and high-range water reducer will vary to adjust the flowability of the grout mixture. The quantity of lightweight sand will need to be adjusted based on the specific gravity of the sand.

Trial mixes of the grout will be tested in simulated debris boxes to ensure that the grout will flow around the debris as required.

The information below provides a brief description of the steps for debris treatment:

- The box containing the hazardous debris will be placed in a debris box brace.
- The box and brace will be moved to the working area. The box lid will be removed.
- Two holes will be cut into each end on the top of the box inside a contamination control tent in the decon bay. The grout mixer/pump will be positioned nearby. The operator will ensure that the holes breach the plastic liner on the inside of the box.
- The debris will be visually inspected to verify that it matches the Material Profile.
- The nozzle of the grout pump will be inserted into the debris and a flowing cement grout will be slowly pumped into the box until the grout rises to within 4 to 6 in. of the box top.
- The cement grout will then be allowed to set overnight. A second layer will then be placed on the first layer to "top-off" the container. Again, the box will be allowed to set overnight.
- Once set, the box will be taken to the landfill for disposal or placed into storage for later disposal when weather and scheduling permit.

For more information, see Overview 4.3.5 in Appendix A of this document.

4.3.6 Waste Repackaging

The ICDF Complex's policy is that waste being shipped off-Site will not be accepted for permanent storage at the ICDF Complex. However, there may be instances where it may be necessary to repackage the waste at the ICDF Complex. In this instance, wastes being shipped to an off-Site treatment, storage, disposal facility may require repackaging into containers that meet DOT shipping requirements. Waste may be removed from its original container and placed in an appropriate new container or may be "over-packed" into the new container. This work will be conducted in the decon building and may be performed in either the treatment area or decon bay.

4.3.7 Aqueous Waste Storage

As defined, tank and tank systems include aboveground tanks located in the SSA and ICDF storage area(s) (i.e., ICDF Tank Storage Area) and belowground tanks, including ICDF Complex sumps and oil/water separators that are components of the ICDF Complex. These tanks will contain aqueous waste destined for treatment and/or disposal in the ICDF evaporation pond. Tanks and tank systems will be managed to ensure they are compatible with the characteristics of the waste placed in them and to ensure that incompatible wastes are not placed in the same tank and/or tank system or in an unwashed tank and/or tank system that previously held an incompatible waste.

For those tank systems that do not have a leak detection system, an inspection schedule will be developed and followed. All deficiencies/problems resulting from inspections will be documented and communicated to the appropriate ICDF Complex facility manager. For more information, see Overview 4.3.7 in Appendix A of this document.

4.3.8 Waste Shuttle Requirements

As stated in Section 2 of the RAWP (DOE-ID 2005b), the routine daily movement of waste into the landfill can be accomplished through two basic mechanisms: dump trucks disposing directly into the landfill or roll-on/roll-off containers that will be placed in queuing areas awaiting disposition. Waste will be moved from the queuing area at the ICDF to the dump face where the waste will be off-loaded. Queued wastes may include bulk soils that are dumped at the work face, as well as containerized waste, PCB waste, asbestos, and monoliths. Specific activities include the following:

- The water truck will apply water to the haul road throughout the operations shift as required.
- The appropriate truck (dependant on the waste form of staged waste) will proceed to the queuing area and load the waste containers for delivery to the disposal cell.
- Prior to loading the waste container, the driver will examine the area around the container for leakage or any other concerns.
- Waste Generator Services (WGS) or the driver (if WGS is not present) will verify that the bar code on the container matches the OWTF and determine if special considerations exist for waste shipment.
- The driver then proceeds to the disposal cell and backs into position as directed by the off-loading coordinator at the dump face.
- The OWTF for the load is reviewed by the off-loading coordinator. If all is in order, the container is prepared for off-loading. If specialized equipment is required for off-loading, it will be positioned to minimize contamination.
- Once the truck has been off-loaded, a survey for radiological contamination is performed (Section 4.9.5.5).
- The location of the waste disposition is entered on the OWTF by the off-loading coordinator and is given to the appropriate data entry person at the end of the shift for entry into the IWTS.
- The driver then proceeds to the empty container section of the queuing area and offloads the empty container, or the driver returns to the dig site if a dump truck is used.
- For containers, the driver picks up another container from the full container queue and proceeds as above.

For more information, see Overview 4.3.8 in Appendix A of this document.

4.3.9 Decontamination

Dry decontamination activities, such as brushing, will be tried upon discovery of contamination. If these procedures are not effective, the equipment may be moved to the decon building and wet procedures

will be used as necessary. Radiological and hazardous contaminants on waste transport vehicles, waste containers, and miscellaneous equipment will be removed as needed. A high-pressure water sprayer will be used to wash the contaminated trucks, containers, and equipment, and, after verification of decontamination, they will be returned to normal use or be staged for future use. All trucks and equipment leaving the ICDF Complex will be verified to be in compliance with the Site radiological-free-release criteria. Equipment to be used again will be staged for future use at a suitable location. Water from the decontamination facility is drained through an oil/water separator to a pump station and then pumped directly to the evaporation pond. An alarm system will be installed to notify operators of a possible pump malfunction.

Decontamination activities may also occur at other locations such as the landfill pit, evaporation pond truck unloading area, or any one of the staging/storage areas. These activities are expected to be very infrequent. In each case, all waste generated would be tracked in IWTS and any free liquids contained and packaged.

4.3.10 Quality Assurance Sampling of Treated Waste

Sampling to confirm the treatment process for each source of waste will be conducted in the manner described in the remainder of this section.

The waste stabilization process, as currently envisioned, will involve the batch treatment of individual soil boxes or containers at the ICDF Complex. As treatment progresses for a series of waste batches, the treated batches will be combined into a larger container (expected to be a 10-yd^3 roll-on/roll-off container) for handling prior to disposal. Composite samples representing approximately 20 yd^3 or two containers, whichever is less, will be generated through the collection and compositing of subsamples from each of the individual treatment batches that are combined into the larger containers. It is expected that five treatment batches will be combined into a larger container. However, the actual number of treatment batches may vary for each container.

The collection of representative composite samples from the containers will proceed in the following progression for the treatment campaign associated with each different source of waste:

1. For containers 1 through 10, five composite samples will be collected from containers 1-2, 3-4, 5-6, 7-8, and 9-10

2. For containers 11 through 42, a composite sample will be collected from two randomly chosen containers out of every four containers (either the first two or the last two containers)

3. For containers 43 through completion of the treatment campaign, a composite sample will be collected from two consecutive containers randomly chosen from every 10 containers

4. Finally, a composite sample will be collected from the last the two containers of each treatment campaign.

In application of the decision rules presented in Section 2.5, Decision Rule, of the *Sampling and Analysis Plan for SSSTF Waste Stablilization Operations* (DOE-ID 2003d) the sampling results from each composite sample collected from a container will be considered to be only representative of the container sampled and all unsampled containers generated following the last sampled containers. An example of this approach would be that the sampling results from containers x and x+1 would be considered representative of containers x and x+1 as well as containers not sampled between the previous sampling event and the sampling of container x. Should the sampling results from a container indicate that the

treated soils in that container meet the alternative LDR treatment standards for contaminated soil (as described in Decision Rules 1 or 2, Section 2.5 [DOE-ID 2003d]), then that container and all containers that sample represents would be considered to have met the alternative LDR standards. Should the sampling results from a container indicate that the treated wastes do not meet the treatment standards (Decision Rule 3, Section 2.5 DOE-ID [2003d]), then the waste in that container would be subject to retreatment, alternate treatment, or alternate disposal, and the unsampled containers that the failed container represents would be resampled as though the sampling campaign were starting again with container number 1. Thus, should containers x and x+1 fail the treatment standard, then the containers not sampled between the previous sampling event and the sampling of container x would each be sampled (and again subject to the decision rules). This would be followed by randomly collecting a composite sample from two consecutive containers for every four containers for the next 32 containers similar to the sampling described in #2 above for containers 11–42. This would be followed by the same sampling routine of collecting a random composite sample from two consecutive containers for every 10 containers for the remaining treatment campaign similar to #3 described above with the final two containers also being sampled. The frequency of waste sampling may be changed if deemed necessary due to unexpected changes in waste characterization. Alternate disposal may be at another facility or by approval as outlined in Section 2.2.1 of the ICDF Complex WAC (DOE-ID 2005a).

Finally, as each treatment campaign ends and waste soil from a new site or source is received at the ICDF Complex, a new waste treatment campaign will be considered to have started and the sampling progression described above will be restarted with the first container.

4.3.11 Use and Management of Containers

ICDF Complex users are required to utilize containers that are deemed acceptable in the appropriate WAC for the waste stream. Filled waste containers will be inspected according to the appropriate inspection procedure.

4.4 Sampling Procedures

4.4.1 Verification Sampling

The verification requirements are described in detail in *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2005c). The purpose of this guidance is to provide the assurance that the Material Profile accurately reflects the contents of the waste stream and that key parameters in the waste do not exceed the limits of the Material Profile. Key parameters have been identified as those that impact ICDF operations or limit acceptance of waste in the landfill, as defined by landfill WAC and/or operational limits. Final checks on waste placed in the ICDF will be performed as part of leachate QA sampling rather than through verification. Leachate QA sampling is addressed in the *ICDF Complex Operational and Monitoring Sampling and Analysis Plan* (DOE-ID 2003b).

4.4.2 Treatment Sampling Procedures

The following list represents the sequence of events that will occur after the stabilization process has been initiated. Facility Operations personnel will stage the waste for sampling.

1. Following treatment of the waste or treatability study sample, a sample is obtained for analysis.

2. For treatability study sampling, a simple grab sample is collected from the resulting treated waste.

3. For full-scale treatment sampling, a grab subsample is collected from each treatment batch that is to be combined in the larger containers, as described in Section 4.3.10. Once all subsamples have been collected from the combined batches, the subsamples will be composited through thorough mixing in a stainless steel bowl using only stainless steel mixing tools.

4. The composite stabilized waste sample material or grab sample from treatability studies is placed into bottles that are labeled with the corresponding sample identification numbers using the sample identifiers in Section 4.1. Sample material will meet the size requirements for TCLP analysis per SW-846 Method 1311 (capable of passing through a 9.5-mm standard sieve) (40 CFR 261, Appendix II).

5. Depending on the radiological activity, material must be shipped to the appropriate laboratory.

Stabilized waste samples will be shipped as soon as possible to the analytical laboratory accompanied by a chain of custody form and appropriate shipping paperwork. The requester will coordinate the procurement of required packaging, if a cooler will not suffice for the levels of radioactivity anticipated (if activity exceeds that for limited-quantity shipments). The laboratory will be contacted for notification of delivery. Upon receipt of the sample, the laboratory will check for damage to the sample container and check for discrepancies between the chain of custody and the sample label information. The person receiving the laboratory sample will sign the chain of custody indicating receipt and transfer of custody of the samples.

4.5 Discrepancy Resolution

In the event that a discrepancy is discovered by ICDF Complex personnel, corrective measures will be initiated. The type and level of action taken is related to the type and level of the discrepancy. These measures can range from field changes caused by unforeseen field conditions to DOE reportable incidents.

Corrective actions will be developed and implemented, addressing deficiencies or problems identified during facility operation. Action levels and time frames will be based on the potential threat to operational or environmental safety that a discrepancy poses (e.g., a procedure deficiency that could result in a release to the environment would be corrected immediately, while an administrative issue could be corrected over a reporting period). More detailed descriptions of action plans associated with various operational activities are discussed in this plan as follows:

- Action leakage rate discrepancies – Section 4
- Inspection discrepancies – Section 8
- Monitoring discrepancies – Section 3
- Waste tracking discrepancies – Section 4 (also addressed in PLN-914)
- Reporting and emergency response discrepancies – Section 9.

4.6 Evaporation Pond Management

A number of operational activities will be routinely conducted at the evaporation pond cells. The following sections discuss expected operations. Additional detail for each of the activities is in Appendix A of this document. Liquid waste will be discharged into the evaporation ponds through two methods: (a) tank/truck unloading via the truck unloading station and (b) pumped directly from the Leachate Collection Recovery System, the leak detection chambers, or the decon building pump station.

4.6.1 Tank Off-Loading

The evaporation pond has been equipped with an off-loading station that allows for discharge from either a truck or container. The station is on the north end of the ponds. The truck will access the off-loading station and discharge through a hose into the station. The waste will pass through the evaporation pond crest pad building and then into the evaporation pond. The unloading facility is designed to accommodate a variety of containers. Regardless of container size, there will be two primary methods for unloading—gravity flow or pumping. For more information, see Overview 4.6.1 in Appendix A of this document.

The station also can be utilized for loading tanks from the evaporation ponds. This is accomplished through a transfer pump and a specific valve alignment in the evaporation pond crest pad building.

4.6.2 Aqueous Waste from Decon/Treatment Facility

The transfer of aqueous liquid wastes generated at the decon building to the ICDF Complex evaporation ponds will be through the pump station to the evaporation pond crest pad building.

Aqueous wastes generated at the decon building include those from

- Soil stabilization processing and equipment cleaning
- Debris treatment processing and equipment cleaning
- Equipment decontamination and cleaning
- Other aqueous wastes, such as WAG 3 well purge water, that may contain solids or an oil fraction.

Aqueous wastes, regardless of source in the decontamination building, will pass through a floor drain/piping system to an oil/water separator and will be collected in the pump station sump. Two "grinder" wastewater pumps are located in the pump station sump. Pumps are controlled by a float system located in the sump. Double-walled pipe is installed to prevent leaks into the environment. For more information, see Overview 4.6.2 in Appendix A of this document.

4.6.3 Liquid Waste Transfer between Evaporation Pond Cells

Transfer of liquids from one evaporation pond cell to the other may occur for a variety of reasons, such as

- Nonroutine maintenance of the cell liner
- Sediment removal

- Balancing the level in the cells
- Reducing the risk of wave overtopping
- Emptying a cell due to a leak that cannot be located.

Transfers will be accomplished by immersing a pump, hose, and power cable assembly with a boom truck. Discharge may be routed through the evaporation pond crest pad building to utilize a flow meter/totalizer or by a hose placed in the other cell and the transfer volume determined by pond level measurement. For more information, see Overview 4.6.3 in Appendix A of this document.

4.6.4 Evaporation Pond Cell Wash Down

Preventing the airborne release of contaminants from the evaporation pond cell will be accomplished by washing down any sediment on the exposed portions of the liner on a regular basis as determined by evaporation rates. This procedure also may be implemented to maintain evaporation pond cell levels during times of high evaporation rates.

Temporary piping, hoses, nozzles, and sprinklers may be utilized. The wash-down technique, and amount of water used, will vary depending upon evaporation rates and the amount of aqueous waste being introduced to the cells.

The volume of water added to the cells will be displayed on a flow meter/totalizer that can be read at the administration trailer or the evaporation pond crest pad building. For more information, see Overview 4.6.4 in Appendix A of this document.

4.6.5 Evaporation Pond Low-Point Sump Cleaning

Sediments will accumulate in the low-point sump of each cell over time. The sediment is expected to be primarily wind-blown sand and dust. As general guidance, when the sediment layer approaches 12 in. in depth, it will be sampled, removed, and packaged for final disposition. The 12-in. depth results in about 10 to 15 yd^3 of material that is handled during cleanout. A combination of operating knowledge and visual operation will be used to determine the (approximate) 12-in. depth. All waste generated from sediment removal will be tracked in IWTS. For more information, see Overview 4.6.5 in Appendix A of this document.

4.6.6 Evaporation Pond Cell Level Control

The inventory of each evaporation pond cell will be tracked through the use of flow totalizers from each discharge location, i.e., the detection chambers, decon building, truck unloading station, etc. This information will be used to monitor the performance of the cells. This information also will be used to manage cell levels to meet freeboard requirements. The liner wash-down equipment will be used for the addition of make-up water.

Following the completion of cell construction, a depth indicator was installed in each cell to allow accurate measurement of the fluid level. The as-built drawings will be used to calculate the cell volume that corresponds to particular depths. For more information, see Overview 4.6.6 in Appendix A of this document.

4.6.7 Evaporation Pond Leak Detection Chamber Monitoring and Liquid Transfer

The evaporation pond leak detection chamber monitoring and liquid transfer will be performed to ensure that the following are implemented:

- Monitor the two leak detection chambers of the evaporation pond cells and remove measurable amounts of liquid as necessary
- Monitor, record, and archive liquid levels in the leak detection chambers and the volumes transferred from each chamber to the evaporation pond at least once each week
- Calculate, based on the weekly leak detection chamber volumes pumped, a leakage rate and compare it to the ALR limit for the evaporation pond cell.

The leak detection chamber transfer system for each sump is designed to operate in an automatic mode. Manual operation of both pumps is available by a hand switch. Valve alignment will not differ with the exception of selecting either the west or east evaporation pond as the pump discharge destination.

The instrumentation and control system will be programmed to archive the leak detection chamber level and volume of liquid pumped from each chamber on a weekly basis. Additional details of the evaporation pond leak detection chamber system operation are provided in Overview 4.6.7 in Appendix A.

4.7 ICDF Complex Instrumentation and Control System

The ICDF Complex utilizes a control and data acquisition system for leak detection, sump level monitoring, pump control, flow recording, alarming (heating, ventilation, and cooling [HVAC] and CAMs), and temperature monitoring for freeze protection. The system has local indication and control stations. In addition, the system includes a centralized control station that performs data archiving and indication. The control system is self-contained except for a link into the main INTEC facility. The system supplies information required to meet regulatory requirements and information to efficiently operate and maintain the ICDF Complex.

The ICDF Complex is comprised of four “buildings” from the control and data acquisition viewpoint: the ICDF evaporation pond crest pad, landfill crest pad, decon building, and admin trailer.

The major components of the ICDF Complex instrumentation and control (I&C) system includes field instruments, discrete and analog input/output modules, programmable logic controllers (PLCs), human-machine interfaces (HMIs), and the communications to connect each of these components. The field instrumentation includes sensors and transmitters, which collect and communicate data, and motor starters, which allow physical actions to be taken based on this data. The input/output modules provide an interface between the field instrumentation and the PLCs. This interface allows data received from the field instrumentation to be assigned to variables (inputs) and provides a path for variables from the logic to initiate actions in the field (outputs). The PLCs utilize the data inputs and programmed control logic to monitor conditions in the field and initiate appropriate actions in the form of alarms or outputs to field devices. The HMIs consist of local operator interfaces at each PLC location and a central control station located in the administration trailer. The central control station receives data from all of the PLCs in the ICDF Complex. All of this equipment is connected through a communication network. In order to get alarm information into the main INTEC facility, a pair of modems is connected via a dedicated phone line. The modems are configured to monitor communications and, if communications are lost between the ICDF Complex and the main INTEC facility, to generate an alarm in the main INTEC facility.

The ICDF Complex control system monitors the operations of the decon building, the conditions of the evaporation pond, and the conditions of the landfill. Most of the control system functions will be the monitoring of levels, flows, and alarms within the ICDF Complex. This allows the ICDF operators to account for any normal or abnormal event in the operation of the Complex. The operators can check the status of the operating conditions at their convenience. Should an alarm condition occur, the controls will immediately notify the operators who initiate the appropriate corrective actions. Alarm conditions are also transmitted to the high-level waste operations Distributed Control System (DCS) in INTEC. This DCS displays in a continuously occupied control room. This is necessary since the admin trailer will not be occupied continuously. In addition to monitoring, many of the operating conditions of the Complex will be archived, such as monitoring data on levels and flows.

Further information regarding the I&C system is contained in Drawings IN-201 and IN-202, the process and instrumentation diagrams for the ICDF Complex landfill and evaporation ponds.

4.8 Leachate Management

This subsection discusses the monitoring and transfer, to the evaporation pond, of landfill leachate.

4.8.1 Landfill Leachate Monitoring and Transfer to Evaporation Pond

Landfill leachate monitoring and transfer are being performed to ensure that the following elements are implemented:

- The hydraulic head over the primary liner of the landfill does not exceed 30 cm (1 ft) by automatically transferring the leachate from the leachate sump
- The sumps are monitored and leachate is transferred from the leachate sump, as necessary during the active life and closure period and that this information is recorded and archived
- The leachate volumes are assessed at least once each week during the active life and closure period and this information is recorded and archived
- Calculate, based on the weekly leak detection chamber volumes pumped, a leakage rate and compare that to the ALR limit for the landfill (immediately notify the facility manager and implement the Landfill Action Leakage Response Plan if the ALR has been exceeded).

The transfer system for each sump is designed to operate in an automatic mode; however, manual operation also is an option. A level transducer will control the starting and stopping of each pump. Individual flow monitor/totalizers will measure the flow and the PLC will monitor and record the data. Sample ports are installed on each line should a leachate sample be required. The leachate may be directed to either one of the evaporation ponds through the positioning of two manual valves in the evaporation ponds crest pad building.

Each of the leachate pumps (with flexible discharge pipe, level transducer cable, and power cable) is placed in its respective sump by lowering it on a permanent cable through a riser pipe from the landfill evaporation pond crest pad building. Additional details of the leachate system are provided in Overview 4.8.1 in Appendix A of this document.

4.9 Landfill Operations

This section addresses the landfill operations at the ICDF Complex. Specific requirements and implementation steps are identified for the disposal of waste in the landfill, as well as the support activities such as maintenance of the facility (haul roads, etc.), dust control, radiological boundary control, radiological survey, and decontamination. The following subsections provide a summary description of the operations of the landfill at the ICDF Complex. The requirement overviews in Appendix A provide a more detailed description of the associated requirements and activities.

4.9.1 Haul Road Management

A clean haul road provides access to the landfill dumping peninsula, for either roll-on/roll-off trucks or dump trucks with direct access into the landfill. The peninsula will be sized and configured as necessary to accommodate the ongoing facility operations, taking into account waste types and weather conditions. The haul road will be maintained with a width and slope appropriate to the operations being conducted to allow safe access to and operation within the landfill. The haul road will be maintained with a width of 30 ft and a maximum slope of 10%. The haul road will be graded and maintained during landfill operations. Traffic control signage will be posted on all haul roads.

The dump peninsula is moved throughout the landfill during operations. Construction of the peninsula is similar to that of the haul road. The dimensions of the peninsula will be approximately 100 × 50 ft and will allow for access to different dump faces dependent on wind direction. For more information, see Overview 4.9.1 in Appendix A of this document.

4.9.2 Traffic Control

Traffic control will be implemented by placing and maintaining signage (i.e., stop, yield, and directional) on the haul roads, at the dump face peninsula, and in the queuing area at the ICDF Complex. The signage is intended to keep the flow of vehicles at the ICDF moving in a safe and efficient manner. Barricades also may be used to control traffic when necessary.

Traffic signage will be modified each time changes are made to the haul road system, peninsula, or other roads within the Complex. Also, if changes are identified that will contribute to more efficient operation, supporting signage changes will be made. The signs will be portable and free-standing. Personnel driving vehicles into the ICDF Complex are expected to read and follow signs and other official posted directions when entering the Complex or crossing a barricade.

4.9.3 Dust/Contamination Control

Dust/contamination control will be implemented as needed to control wind dispersal of dust and contaminants (e.g., IDAPA 58.01.01.585 and IDAPA 58.01.01.586) from the landfill and active areas (access roads) during operations and off-hours through the use of a variety of control mechanisms. Specific activities include the following:

- Before each operational day begins in the ICDF landfill, water may be applied to landfill access roads and the traffic areas in the dumping peninsula, including the dump face, as a dust suppressant.

- As needed during the operational day, water or dust suppressant will be applied to access roads, landfill traffic areas, the dump face area, and the active waste disposal cells to control emissions.

- A soil fixative will be applied, as determined by the RCT, to all disturbed areas of the waste surface and to the disturbed areas of the dump peninsula and landfill access roads to control dust. An overview (4.9.3a, Soil Fixative Application) is presented in Appendix A that describes the mixing and application of soil fixative for daily and seasonal applications.

- ICDF personnel will apply water to the waste being compacted and the waste being dumped at the dump face. Water will be supplied using a hose connection to the hose bib on the north side of the landfill, via temporary water lines, or by water truck. The purpose of the addition of water to the waste upon dumping is to control dust and minimize airborne emissions. The application of water aids waste compaction. Field operations personnel will ensure that water is not over-applied to prevent ponding of water in the landfill and to minimize generation of leachate. For more information, see Overviews 4.9.3 and 4.9.3a in Appendix A of this document.

4.9.4 Radiation Boundary Control

Radiation boundary control will maintain the control boundary that separates the radiological controlled area from the clean area within the landfill, around the evaporation ponds, and at the decontamination and queuing areas. The main activities include the following:

- Maintain barriers around the active disposal area in the ICDF landfill; support the location of the barriers with radiological surveys and adjust the boundary, as needed

- In similar fashion, routinely survey the evaporation pond areas and the queuing area, evaporation pond crest pad buildings, and decon building. Also, establish barriers, where needed

- Develop and maintain an ICDF Complex map to be displayed at the admin trailer and other places, as required, showing the locations of controlled areas.

4.9.5 Landfill Waste Placement

Waste containers will be placed in the landfill in accordance with Overview 4.9.5.1, "Landfill Waste Off-loading/Placement Requirements," in Appendix A of this document. Placement of waste within the ICDF landfill will be subject to the following constraints:

- The waste needs to reach the top of the north end of the landfill as soon as possible to allow access to the landfill from an access road on the north side.

- Access to the landfill floor is to be maintained.

- The maximum drop from the dump peninsula will be 6 ft to preclude the need for fall protection equipment and procedures.

- The dump peninsula should keep three dumping direction options to accommodate changing wind directions.

- An approximate 100-ft-wide level lift will be completed adjacent to side slopes before waste is placed further up on the sloped area of the landfill. Doing so provides a buttressing effect to the side-slope liner as wastes build from the bottom to the top of the facility.

- Material size and type limitations placed within 5 ft of the operations layer are necessary for liner protection (see Overview 4.9.5.1).

4.9.5.1 Waste Off-loading/Placement. The majority of the waste shipments to be received at the ICDF Complex will be bulk soils. However, a small percentage will be made up of the other waste types. To accommodate the various waste types, arrangements will be made to have necessary equipment at the landfill when the shipments are received for off-loading. Some waste may need to be staged in the cell awaiting the proper placement criteria. If this occurs, waste may not reside in the cell without being placed for longer than 7 days.

The scheduled shipments will be reviewed in advance to identify unique equipment needs for the off-loading of specific waste shipments.

For bulk-waste soil, the following arrangements will be made:

- Packaging requirements for bulk-waste soils require either a lined container to facilitate a clean off-loading at the dump face or a sealed-bed dump truck to preclude the spread of contamination during transport. Upon arrival at the facility, the container/truck is surveyed by RadCon and the tarp is rolled back to allow easy off-loading. At the dump face, the containers/trucks are off-loaded by raising the container/bed and allowing the soil to slide out.

- To facilitate landfill operations, a compacted base of a given waste stream may be established at the dump face as described above. Once that base is established, future loads of the same waste stream may be dumped onto the compacted base (to facilitate ramp construction), moved over the compacted base to the desired placement location (possibly greater than 100 ft from the dump face), and then spread in 12-in loose lifts and compacted within the 4-grid limit.

- The waste will be spread in 12-in. loose lifts, no further than 100 ft from the dump face, and the location will be noted on the OWTF. This information will be put into IWTS.

- Throughout the process, water will be applied as necessary to control dust and aid compaction.

For containerized soil waste, the following arrangements will be made:

- Containers will be off-loaded and placed either in the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid after off-loading has been completed. In the latter case, final placement will be completed as soon as possible (generally within 48 hours of off-load) and soil waste will be placed over the containers and compacted.

- When placed into the landfill, the containers will be located on select waste or fill at least 5 ft above the top of the clay liner, at least 2 ft below the bottom of the final cap elevation and spaced as specified in EDF-ER-286.

- The grid location of the container will be recorded on the OWTF and entered into IWTS.

- Containers may be filled with grout after placement to meet the void space and compaction requirements. The containers will be crushed by the bulldozer, spread into a lift, and covered with soil waste or clean soil prior to compaction.

- Throughout the process, water will be applied as necessary to control dust and aid compaction.

For steel containers and drums, the following arrangements will be made:

- Steel containers and drums will be off-loaded in either the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.
- Steel containers or drums will be located on select waste or fill at least 5 ft above the top of the clay liner, at least 2 ft below the final cap elevation, and spaced as specified in EDF-ER-286.
- The steel containers and drums are required by the WAC to be full and will be covered by waste soils and the soils compacted. Containers may be filled with grout after placement to meet void space and compaction requirements.
- Throughout the process, water will be applied as necessary to control dust and aid compaction.

For large debris, including steel and concrete beams and monoliths, pipes, and culverts, the following arrangements will be made:

Large Debris:

- This debris will be off-loaded in the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.
- Debris will be located on waste at least 5 ft above the top of the original operations layer, 2 ft below the final cap elevation and spaced as specified in EDF-ER-286, unless other placement criteria are specified based on technical justification.
- The grid location of the debris will be recorded on the OWTF and in IWTS.
- The beams and monoliths will be covered by waste soils and the soils compacted.
- Throughout the process, water will be applied as necessary to control dust and aid compaction.

For large and small concrete and building rubble, the following arrangements will be made:

- Rubble will be off-loaded in the appropriate grid location or off-loaded to an interim area and then moved to the appropriate landfill grid. Soil waste will be placed over the rubble and compacted.
- Rubble will be spaced so that soil waste can be placed between the rubble pieces to ensure appropriate compaction. The debris will be covered with soil waste and soil will be compacted.
- Throughout the process, water will be applied as necessary to control dust and aid compaction.

For asbestos-containing waste, the following arrangements will be made:

- Asbestos-containing material (ACM) will only be accepted for ICDF landfill disposal if the material is radiologically contaminated and/or contains hazardous waste constituents and is packaged according to the ICDF landfill WAC (DOE-ID 2005a). Equipment will be utilized as required to off-load the ACM. Delivery to the ICDF will be prearranged in order to complete prompt delivery and disposal.

- ACM will be placed in a 2-ft-deep formed trench consisting of two berms with a trench between. Previously placed waste will not be disturbed. The asbestos waste will be placed in the trench, covered with 6 in. of waste soil or a dust suppression agent, and compacted. This will be completed at the end of the operating day, or within a 24-hour period while the site is in continuous operation, as required by 40 CFR 61.150.

- Alternatively, the ACM may be placed in containers and disposed as containerized waste as noted above. The containers will be placed in an area designated for ACM with the location noted on the placement map. When grouting ACM containers, special care shall be taken to ensure control of asbestos.

- The grid location of the ACM will be recorded on the OWTF and in IWTS.

4.9.5.2 PCB Management. The ICDF landfill has been designed to dispose of PCB-contaminated debris > 500 ppm (DOE-ID 2005a) and soils containing PCBs with levels < 500 ppm. Operational requirements for storage, disposal, and recordkeeping for PCB waste are presented in this section. As with all waste, a Material Profile will be required from the ICDF Complex user. If decontamination practices were used, these must be documented on the Material Profile including a demonstration that the waste stream is below the 500 ppm WAC limit.

A PCB-compliant waste storage area is located near the decon building as shown on Figure 1-2. PCB waste will be stored at this location until the landfill schedule allows for disposal or, if necessary, an alternative disposition pathway has been determined. It is possible that PCB waste received at the ICDF will be radioactive as well as PCB-contaminated. If the waste exceeds the acceptable radioactive or PCB concentrations presented in the WAC, alternative disposal methods will be investigated. Disposition of PCB-contaminated waste will be tracked using IWTS.

4.9.5.3 Waste Compaction and Inspection. Waste compaction is a crucial function in the operation of the landfill. Compaction testing will be conducted at intervals of 2,500 yd^3 disposed. The compaction procedure to achieve the equivalence of 90% of ASTM D698 was developed from a matrix of tests conducted on a range of expected soil types. These tests will initially be conducted on clean soils out of the landfill area using equipment anticipated for waste placement and compaction. Three general soil types were tested: fine-grained clayey silts (such as the Old Alluvium), alluvial sands and gravels, and topsoil (near-surface silty sands). For each soil type, a 12-in.-thick test lift will be laid down, a D-9 or similar dozer was driven over the test lift, and compaction will be tested by several methods. The procedure was repeated until the 90% compaction standard or greater is attained. Using the results from these tests, a matrix was developed that provides the number of dozer passes required for each general soil type. The result of the compaction of different methods may justify the use of the Humbolt GeoGauge as an alternative verification method. The Agencies will be supplied the results of the testing for approval of the Humbolt GeoGauge.

To achieve desired compaction, the tasks include the following:

- Soil waste is off-loaded at the dump face. The dump face drop from the peninsula floor to the active waste floor will be maintained at less than 6 ft.

- Debris and packaged waste will be placed in the landfill and covered with soil waste prior to compaction. Routine operations may involve holding the waste in an interim area in the landfill until conditions allow for correct compaction around the debris. Waste may not be staged in the landfill longer than 7 days while waiting for placement.

- The dozer will move the waste away from the dump face and spread it across the working grid(s). Water will be added as needed to control dust and aid in compaction.

- The dozer operator will base the number of passes required to achieve compaction on the soil type provided by the generator, as discussed above.

- Containerized waste or monoliths will be placed and surrounded by soil waste and compacted by the same techniques.

- After approximately 2,500 yd^3 of waste has been placed, a compaction test will be performed to determine if the compaction procedure is reaching 90% of ASTM D698 (Standard Test Method). A nuclear density gage (using procedures identified in ASTM D-2922) or a Humboldt GeoGauge (using ASTM D-6758) following Agency approval will be used to determine in-place compaction.

- Asbestos waste will be covered with a minimum of 6 in. of soil or a dust suppressant agent and compacted as specified.

- The compaction test results will be entered into the operations log. If remedial action is required based on the test results, it will be implemented on the following operations shift.

  For more information, see Overviews 4.9.5.3 and 4.9.5.3a in Appendix A of this document.

4.9.5.4 In-Cell Grouting. In the case of a waste item that poses difficulty for compaction, void space, or danger to equipment and personnel, in-cell grouting may be performed. Additional information regarding in-cell grouting may be found in Overview 4.9.5.1 in Appendix A of this document.

4.9.5.5 Radiological Survey Requirements. All vehicles that enter the landfill will be surveyed prior to leaving. Following the completion of the off-loading of waste from the vehicle, the container will be lowered and the truck moved forward away from the dump face. The RCT will perform a radiological survey of the tailgate area, the rear tires, and the rear of the vehicle. If background is high, the vehicle will be moved to a lower background area where a radiological survey can be performed.

If no contamination is detected, the vehicle will be released and allowed to return to the ICDF Complex queuing area to off-load the empty container or leave the facility. If contamination is detected, the vehicle will be decontaminated in place, moved to a designated decon area in the landfill or moved to the decon building where a more specific survey will be performed to identify the area of the contamination. Decon procedures will be implemented to remove the contamination. The results of the radiological survey and decon process shall be recorded. For more information, see Overview 4.9.5.5 in Appendix A of this document.

4.9.5.6 Decontamination. Equipment that has been determined to be externally contaminated during the radiological survey will be required to be decontaminated prior to exiting the landfill.

The contaminated equipment will be moved to a designated decontamination area in the landfill. The equipment will be decontaminated with the assistance of an RCT. The initial decontamination effort will invoke dry techniques (i.e., sweeping or brushing). More aggressive techniques (i.e., wet techniques including water and/or steam) will be used, as required, to remove the contamination and obtain a clean survey that will allow for the release of equipment. If wet techniques are required in the decontamination effort, the equipment will be placed on a portable liner and the liquids will be collected and disposed of as waste. If decontamination efforts fail in the landfill, the equipment will be placed on a lowboy trailer and moved to the decon building.

4.10 Start-up Testing

Start-up testing was completed throughout the ICDF Complex prior to operation. The following sections discuss the start-up tests for their respective equipment.

4.10.1 Pump Tests

The pump testing was a combination of component testing completed during component construction and installation testing. The objective of the testing was to verify that the pumps and associated controls operate as designed. Included in the pump tests were all pumps that (a) remove water and waste from the various ICDF Complex sumps, (b) transfer leachate from the landfill to the evaporation pond, and (c) transfer water between ponds. Specific pumps that were tested include the following:

- East and west evaporation pond leak detection chamber pumps
- Evaporation pond transfer pump
- Combined sump pump
- Landfill leachate collection and recovery high-volume and low-volume pumps
- Landfill leak detection and recovery pump
- Landfill secondary leak detection and recovery pump
- Landfill crest pad building sump pump
- Pump station grinder pumps
- Lift station grinder pumps.

The system operation (SO) tests verified that the design flow rate is delivered at the appropriate head. Also, the control system (automatic and/or manual) was demonstrated to be consistent with the design.

4.10.2 Pump Deployment and Retrieval System

The two leachate and four leak-detection chamber pumps were lowered into place through a 12- or 18-in.-diameter riser pipe. As part of the initial in-place pump testing, each pump was lowered into position using a cable system to verify the operability of the system. For more information, see Overview 4.10.2 in Appendix A of this document.

4.10.3 Level Detection Systems Check

The level detection systems checkout tests addressed all level devices used at the ICDF Complex. Level detection systems exist in all sumps, each of the evaporation pond cell leak detection chambers, and the leachate collection sump and leak detection system sump in the ICDF landfill.

4.10.4 Tank Integrity

The tank integrity testing addressed all of the sumps at the ICDF except those exempted by 40 CFR 264.1 (g). Each sump was checked for leak tightness by adding a measurable amount of water to each sump and observing the water level for a specified period of time. If a sump is found to not be leak-tight, repairs were made to correct the problem before final covering and putting the unit in service. They are for emergency use only (e.g., leak detection sumps). These sumps will be inspected on a regular interval, and, if liquids are detected, removal of the liquid will be a priority of the ICDF operations. All liquid must be removed within a 72-hour period.

The sumps to be tested include the following:

- A tank system composed of the concrete P-trap (in the decon building), oil/water separator and the pump station
- Combined sump (west of the evaporation pond crest pad building).

4.10.5 Instrumentation Checkout

Instruments at the ICDF Complex will be checked for continuity during installation. Proper operation was verified during the operational checkout. Instruments providing analog readings were calibrated as part of the installation process. Instruments will continue to be calibrated in a calibration lab when possible and in situ when required.

4.10.6 Set-Point Determination for Pump Operation

These start-up tests determined the set points for the various pumps at the ICDF Complex. Each pump and level detection system were subjected to an integrated test to verify and establish the actual actuation levels for the pumps.

4.10.7 Life Safety Systems and Monitoring Equipment

Prior to facility startup, life safety systems, such as fire safety equipment, CAMs, etc., were checked for operation.

4.11 ICDF Complex Access

This subsection discusses the requirements for ICDF Complex access.

4.11.1 ICDF Complex Access

The ICDF Complex is considered a Property Protection Area. It is completely surrounded by a fence, with gates and other entrances designed to control entry. Normal employee access to the ICDF Complex will be through the administration area and the north gate. ICDF Complex authorized employees have unrestricted access to enter and leave ICDF Complex areas, provided they have current and appropriate training, and a Department of Energy Idaho Operations Office (DOE-ID) -issued INL badge as required for their particular work activities.

ICDF Complex employees are required to wear badges and dosimetry, as required by the Job Safety Analysis (JSA)/RWP, at all times, in plain view, above the waist and below the neckline, unless health and safety considerations prohibit. Personnel who forget their badge must show picture identification (ID) to

security personnel to obtain a temporary badge denoting proper access authorization. If an employee does not have a picture ID, the employee's manager or designee can be contacted for positive employee identification.

All hand-carried articles brought into the ICDF Complex are required to have identification tags that list, at a minimum, the owner's name, work organization, and work phone number.

ICDF Complex access points will be open during normal business hours and closed at the end of the business day. The administration trailer, the entrance security gate, and other gates as appropriate (e.g., evaporation pond gate) will be locked/secured at the close of normal working hours. Keys to individual trailers, gates, file cabinets, etc., will be issued to ICDF Complex employees on an as-needed basis. All keys will be controlled through an established key control program. For more information, see Overview 4.11 in Appendix A of this document.

4.11.2 Visitor Access Requirements

Visitors to the ICDF Complex are required to be on official business. Visitor access to the ICDF Complex will be through the administration area. Visitors are required to sign both the visitor log (Form 473.01, Visitor Traffic Log) at the ICDF admin trailer. Visitors will be briefed on the ICDF Complex health and safety issues prior to leaving the administration area.

Visitors are required to wear badges and dosimetry, as appropriate, at all times, in plain view, above the waist and below the neckline. Visitors will be checked for the appropriate training and dosimetry as required for the areas to be entered. Signs and barriers will be used to identify and control access to CERCLA work zones, construction areas, and radiological control areas. Visitors who have a badge but not the appropriate need to enter, proof of training, and dosimetry will be allowed to enter the uncontrolled areas of the site (e.g., the administration area) but will not be allowed within the posted exclusion zones. Visitors who enter areas other than uncontrolled areas of the site require an escort. ICDF Complex personnel who have completed the required training can escort visitors. Subcontractor personnel who have completed escort and the required CERCLA training are allowed to escort other subcontractor personnel or visitors.

All hand-carried articles brought into the ICDF Complex are required to have identification tags that list, at a minimum, the owner's name, work organization, and work phone number.

Periodic inspections will be performed on packages, boxes, briefcases, backpacks, and similar articles carried by or in the possession of visitors when entering or exiting the ICDF Complex. Routine inspections on these items are not planned as part of ICDF Complex operations. Failure to comply with a random inspection will result in denial of access. Prohibited items identified during an inspection will be confiscated. Prohibited items include, but are not limited to, firearms, ammunition, alcoholic beverages, illicit drugs, explosives, wiretapping or eavesdropping devices, or any dangerous or potentially dangerous instruments or materials likely to cause substantial injury to persons, property, or animals. Site security will be contacted in these instances. Investigating and reporting of security incidents will be performed in accordance with ICP procedures and guidelines.

4.11.3 Perimeter Control and Inspection Requirements

The perimeter of the ICDF Complex is surrounded by a fence, with gates and other entrances designed to control entry. Signs reading "Danger-Unauthorized Personnel Keep Out" will be posted at entrances to the ICDF Complex, the landfill, and the evaporation pond. All signs will be posted in English, will be positioned so they can be seen from all approaches, and will be sized so they can be read

from a distance of 25 ft. Signs and barriers will be used to identify and control access to CERCLA work zones, construction areas, and radiological control areas.

A monthly inspection of the perimeter of the ICDF Complex fencing will be performed to ensure the fence is intact and to determine the need to remove accumulated debris. The perimeter inspection will also include a verification of the following:

- Normally used gates (e.g., the evaporation pond and ICDF Complex entry gates) are operable and capable of being locked and locks are present/operable.
- Normally locked gates and associated locks are operable and remain locked.
- Required signs reading "Danger-Unauthorized Personnel Keep Out" are posted at the appropriate locations and can be read from a distance of 25 ft.

4.12 Emergency Response and Alarm Operation

Responses to a number of potential emergency/alarm situations that may occur at the ICDF are listed below. Additional details may be found in Appendix A of this document.

4.12.1 Loss of Utilities

Loss of utilities includes loss of raw water, electrical power, potable water, or fire water. These are discussed in more detail below:

- Loss of raw water—Processing operations in all locations (decon building, landfill, evaporation pond cells) would be either restricted or suspended. An ICDF Complex water truck with a spray nozzle may be used to spray any soil in the landfill that requires water for compaction or dust control. The water truck also could be used to complete liner wash-down in the evaporation pond cells.
- Loss of electrical power—Decon building waste stabilization operations, if being conducted, would stop immediately. All liquid pumping operations would stop. Receptacles for a portable generator are available in each crest pad building to provide power to the leachate and other sump pumps in the event of an extended outage. A 15-min uninterruptible power supply will be available for the I&C system.
- Loss of potable water—The admin trailer and change room area of the decon building have potable water. An impairment of the system would require placement of drinking water containers and the use of INTEC restroom and personnel shower facilities until potable water service was restored. The potable water system is from INTEC and does have a back-up diesel power generator.
- Loss of fire water—The administration trailer and decon building have wet pipe fire sprinkler systems. There is a fire hydrant near the southeast corner of the landfill and evaporation pond crest pad buildings but no sprinkler systems in the crest pad buildings. An impairment of the fire water system may require that a "fire watch" (to be determined by the ICDF fire protection engineer) be established until the system was restored. The fire water system supply is from ICDF and does have back-up diesel-powered pumps.

4.12.2 Abnormal Facility Conditions

Abnormal facility conditions include earthquakes, wildland fire, extreme weather, spill/leak response, fire within the ICDF Complex, and plant evacuation/take cover. Note that ICDF is under the auspices of the CFA Emergency Communication Center (ECC). Evacuation and take cover alarms from INTEC may be heard at the ICDF and shall be responded to accordingly. These alarms originate from the INTEC Emergency Communication System (ECS). These conditions are discussed in more detail below:

- Earthquake—Stop all operations work and follow instructions from the CFA Emergency Communication Center (ECC). Reentry into processing facilities will be made only after proper management authorizations and radiological surveys.

- Wildland fire— In the case of threat from a wildland fire, or smoke from a fire, follow instructions from the CFA ECC. This may be a "TAKE COVER" instruction or a facility evacuation order from the INL Fire Department.

- Extreme weather—A "TAKE COVER" or evacuation order may be given over the INTEC ECS or through the CFA ECC system in response to high winds, thunderstorm, heavy rain, hail, or snow.

- Spill/leak response—Actions will be governed by the ICDF Complex Emergency Response Plan. Instructions to personnel will be relayed through the INTEC ECS.

- Fire within the ICDF Complex—Fire alarm pull boxes and other sensors are located in the admin trailer, decon building, and evaporation pond crest pad buildings. Personnel response instructions will be given through the INTEC ECS.

- Plant evacuation/take cover—These events will be announced over the INTEC ECS or the CFA ECC. Other than the event discussed above, this could be the result of an event at a neighboring facility.

4.12.3 ICDF-Specific Abnormalities

Abnormalities specific to the ICDF could include a worker falling into an evaporation pond cell, the liner leaking, or a leaking tank/sump. These are discussed in more detail below:

- Worker falling into an evaporation pond cell—Notify the INL Fire Department for rescue assistance. Utilize available rescue equipment as covered by training.

- Evaporation pond liner leakage—Notify ICDF Complex management. Stop liquid additions to the leaking cell. Initiate transfer of the inventory of the leaking cell the other cell.

- Landfill liner leakage—Notify ICDF Complex management. Stop waste placement in the leaking cell. Initiate investigation into the location and cause of the leak.

- Tank/sump leakage—Notify ICDF Complex management. Isolate the tank or sump from sources of liquid. Remove liquid from tank or sump and conduct repair.

4.12.4 Landfill Leachate Transfer to a Truck

This operation would be used in an emergency situation if the evaporation pond cells were not available to accept leachate. Performance of this procedure would allow the ICDF Complex to continue to meet regulatory requirements. The specific relevant requirement is to prevent the hydraulic head over the primary liner of the landfill from exceeding 30 cm (1 ft).

Leachate would be transferred via the manual control of the Leachate Collection Recovery System pump through the evaporation pond crest pad building to the CPP-2706 truck loading/unloading station. For more information, see Overview 4.12.4 in Appendix A of this document.

4.12.5 Landfill Action Leakage Rate Response Plan

Should the landfill ALR be exceeded, the landfill ALR response plan will be developed and implemented. This plan will comply with the provisions of 40 CFR 264.304(a)-(c) and will include, but not be limited to, the following activities:

- Calculation of the daily leakage rate for the landfill leak detection system
- Schedule of Agency notifications
- Assessments for size, location, and cause of the leak
- Assessments for the impact of the leak
- Short-term corrective actions
- Long-term corrective actions.

Section 9 and Overview 4.12.6 in Appendix A of this document present additional information concerning response actions and necessary notifications.

4.12.6 Evaporation Pond Action Leakage Rate Response Plan

Should the evaporation pond ALR be exceeded, the evaporation pond ALR response plan will be implemented. This plan will comply with the provisions of 40 CFR 264.223(a)-(c) and will include, but not be limited to, the following activities:

- Calculation of the daily leakage rate for the evaporation pond cell leak detection system
- Schedule of Agency notifications
- Assessments for size, location, and cause of the leak
- Assessments for the impact of the leak
- Short-term corrective actions
- Long-term corrective actions.

Section 9 and Overview 4.12.7 in Appendix A of this document present additional information concerning response actions and necessary notifications.

4.12.7 Liquid Transfer from Evaporation Pond to a Tank

Transfer of liquids from one evaporation pond cell to a truck can be performed via the truck loading/unloading facility. This activity would only be performed if both evaporation pond cells were approaching capacity or if circumstances precluded the transfer of liquid from one cell to the other. For more information, see Overview 4.12.8 in Appendix A of this document.

4.13 Seasonal Winterization/Startup

This section addresses seasonal requirements for facility winterization and startup operations. The ICDF landfill will be operational for soil disposal only during that part of the year that weather permits. Debris placement may proceed year-round. The evaporation ponds and the decon building will be operational year round. Specific seasonal facility requirements and implementation steps necessary to (1) prevent damage to facilities and equipment from cold weather, (2) ensure continued safe facility operation, and (3) return systems from "preserved" status to fully operational status in support of ICDF Complex normal operations are outlined in the remainder of this section.

4.13.1 Seasonal Winterization

Seasonal winterization activities will be completed for ICDF facilities (including the two crest pad buildings and the admin trailer) to prevent damage from cold weather and ensure access of snow removal and safety related equipment (i.e., fire hoses, motorized fire equipment).

Heating systems will be inspected and thermostats will be set to appropriate temperatures. Water systems will be protected, secondary containment and condensate will be drained, and staging, parking, and outlying areas will be inspected to identify and relocate items that may hamper snow removal efforts or prevent the efficient handling of safety-related equipment.

A soil stabilization product (i.e., ConCover or equivalent) will be applied to disturbed areas of the landfill using a hydroseeder as appropriate, per the manufacturer's recommendation. This product is expected to last 6 months. Placement of this stabilization is described in Overview 4.9.3a in Appendix A.

Equipment winterization activities associated with the landfill, evaporation pond, and truck loading station will be performed. These activities include removal of liquids from various pieces of equipment, temporary lines, hoses and hose bibs, addition of antifreeze to appropriate equipment, pump removal, and relocation and storage of portable equipment and structures (i.e., landfill personnel shed and associated portable toilet).

4.13.2 Seasonal Startup

Seasonal startup activities will be performed to return systems from "winterized" status to fully operational status in support of ICDF normal operations. These include inspections and associated repairs, equipment operability checks, relocation of portable equipment and structures, removal of antifreeze, and resetting of thermostats on heating and air conditioning units. A radiation inspection of landfill areas will be performed to confirm no loss of contamination control.

4.14 ARAR Operational Compliance Crosswalk

CERCLA determines the applicable environmental compliance requirements in the ROD through the identification of the ARARs. The ARARs that apply to the ICDF Complex appear in Section 12.2.3 of the OU 3-13 ROD (DOE-ID 1999). To demonstrate design and construction environmental compliance, a number of ARAR compliance matrices have been presented throughout the development of previous ICDF Complex documentation (TFR-17 and TFR-71). Previous ARAR compliance matrices have been centered on the design and construction requirements of the ARARs. Table 4-1 presents an ICDF Complex operations compliance crosswalk for those ARARs involving operational requirements.

At the ICDF Complex, operational compliance will be accomplished through a number of mechanisms, including, but not limited to, the following:

- Establishment and monitoring of operational limits
- Regulatory and company-required inspections and audits
- Electronic readings of pertinent operational data
- Databases that are developed for tracking and monitoring
- Alarms established in the engineered systems
- Warning flags incorporated into the waste tracking system.

The implementation of each of these mechanisms is discussed in detail throughout this O&M Plan and in the RAWP (DOE-ID 2005b) and its supporting appendixes. Table 4-2 indicates the specific section and/or document that demonstrates compliance with each operational ARAR.

Table 4-2. Operational compliance crosswalk.

Alternative/ARARs citation	Description	Comments	Compliance Document
IDAPA 16.01.01.650, 16.01.01.651	Idaho fugitive dust emissions	Will be met during construction through administrative and engineering controls.	NA[a]
IDAPA 16.01.01.585 IDAPA 16.01.01.586	Rules for the control of air pollution in Idaho	Will be met using administrative and engineering controls.	EDF-2237
40 CFR 61.92 40 CFR 61.93	NESHAP for radionuclides from DOE facilities, emission monitoring and emission compliance	Will be met using administrative and engineering controls.	EDF-2236
40 CFR 122.26	Storm water discharges during construction	Will be met during excavation and disposal through engineering controls.	NA
IDAPA 16.01.05.006 (40 CFR 262.11)	Hazardous waste determination	Applies if the soils disposed outside of the WAG 3 AOC; applies to soils where a hazardous waste determination has not been made.	PLN-914
IDAPA 16.01.05.008 (40 CFR 264.553)	Temporary units	Applies to temporary (< 1 year) storage or treatment units.	DOE/ID-11000, Section 5
IDAPA 16.01.05.008 (40 CFR 264.554)	Remediation waste staging piles	Excavated soils can be temporarily staged prior to disposal in the ICDF without triggering LDRs or minimum technical requirements.	DOE/ID-11000, Section 5
IDAPA 16.01.05.011 (40 CFR 268)	Land disposal restrictions	Applies only to soils from Sites CPP-92, CPP-97, CPP-98, and CPP-99 and soils/debris from outside WAG 3, or soils that have triggered placement.	DOE/ID-10903, DOE/ID-10924, DOE/ID-10865
IDAPA 16.01.05.011 (40 CFR 268.49)	Alternative LDR treatment standards for contaminated soils	Applies only to soils from Sites CPP-92, CPP-97, CPP-98, and CPP-99 and soils/debris from outside WAG 3, or soils that have triggered placement.	DOE/ID-10903, DOE/ID-10865

Table 4-2. (continued).

Alternative/ARARs citation	Description	Comments	Compliance Document
IDAPA 16.01.05.005 (40 CFR 261.20 through 24)	Hazardous waste characteristics identification	Applies if the soils are excavated and consolidated to facilitate their management and for soils that are treated or placed in a long-term storage unit.	PLN-914; DOE/ID-11000, Section 4.1
40 CFR 761.50(a)(5)	PCB disposal requirements	Applies to PCB-contaminated soils and debris.	DOE/ID-10865; DOE/ID-11000, Section 4.9
40 CFR 761.50(b)(3)	PCB remediation waste	Applies to PCB-contaminated soils and debris.	DOE/ID-10865; DOE/ID-11000, Section 4.9
40 CFR 761.50(b)(7)	PCB radioactive waste	Applies to PCB-contaminated soils and debris.	DOE/ID-10865; DOE/ID-11000, Section 4.9
40 CFR 761.50(b)(8)	Porous surfaces	Applies to PCB-contaminated soils and debris.	DOE/ID-10865; DOE/ID-11000, Section 4.9
40 CFR 761.50(d)(4)	Disposal requirements for PCBs	Applies to PCB-contaminated soils and debris.	DOE/ID-10865; DOE/ID-11000, Section 4.9
IDAPA 16.01.05.008 [40 CFR 264.14(a), (b), (c)]	Site security	Applies to either soils capped in place or consolidated in the ICDF.	DOE/ID-11000, Section 4.11
IDAPA 16.01.05.008 [40 CFR 264.15(a),(c)]	General inspection requirements	Applies to either soils capped in place or consolidated in the ICDF.	DOE/ID-11000, Section 8
IDAPA 16.01.05.008 [40 CFR 264.16(a)(1),(c)]	Personnel training	Applies to either soils capped in place or consolidated in the ICDF.	INEEL/EXT-01-01318
IDAPA 16.01.05.008 (40 CFR 264.92)	Groundwater protection standard	Substantive parts of regulations will be met.	DOE/ID-10955
IDAPA 16.01.05.008 (40 CFR 264.93)	Hazardous constituents	Substantive parts of regulations will be met.	DOE/ID-10955
IDAPA 16.01.05.008 (40 CFR 264.95)	Point of compliance	Substantive parts of regulations will be met.	DOE/ID-10955

Table 4-2. (continued).

Alternative/ARARs citation	Description	Comments	Compliance Document
IDAPA 16.01.05.008 (40 CFR 264.97)	General groundwater monitoring requirements	Substantive parts of regulations will be met.	DOE/ID-10955
IDAPA 16.01.05.008 (40 CFR 264.98)	Detection monitoring program	Substantive parts of regulations will be met.	DOE/ID-10955
IDAPA 16.01.05.008 (40 CFR 264.114)	Disposal and decontamination of equipment, structures, and soils	All equipment will be decontaminated before leaving the ICDF.	DOE/ID-10984, Section 9
IDAPA 16.01.05.008 (40 CFR 264.301)	Landfill design and operating requirements	ICDF will be designed to meet minimum technology requirements or equivalent.	NA
IDAPA 16.01.05.008 [40 CFR 264.309(a) and (b)]	Surveying and recordkeeping	Substantive requirements will be met.	PLN-914
IDAPA 16.01.05.008 [40 CFR 264.310(a)(1)(2)(3)(4)(5)]	Landfill closure requirements	Substantive requirements will be met.	DOE/ID-10984, Section 9
IDAPA 16.01.05.008 [40 CFR 264.310(b)(1)(4)(5)(6)]	Landfill postclosure requirements	Substantive requirements will be met.	DOE/ID-10984, Section 9
IDAPA 16.01.05.008 [40 CFR 264.18(a) and (b)]	Landfill location standards	Substantive requirements will be met.	NA
IDAPA 16.01.05.008 (40 CFR 264.302)	Landfill action leakage rate	Substantive requirements will be met.	DOE/ID-11000, Section 4.12
IDAPA 16.01.05.008 (40 CFR 264.553)	Temporary units	Applicable for soils or liquids that are managed on-Site.	DOE/ID-11000, Section 5
IDAPA 16.01.05.008 (40 CFR 264.554)	Remediation waste staging piles	Applicable for soils that are excavated and managed on-Site.	DOE/ID-11000, Section 5
40 CFR 761.75(b)(1)(2)	PCB landfill design requirements	Applicable for PCB-contaminated soils; substantive requirements will be met.	NA
40 CFR 761.79(a) and (b)	PCB container and moveable equipment decontamination requirements	Applicable for PCB-contaminated soils; substantive requirements will be met.	DOE/ID-10865; DOE/ID-11000, Section 4.9

Table 4-2. (continued).

Alternative/ARARs citation	Description	Comments	Compliance Document
IDAPA 16.01.05.008 (40 CFR 264.192)	Design and installation of new tank systems or components	Applies to the SSSTF.	NA
IDAPA 16.01.05.008 (40 CFR 264.601)	Miscellaneous units environmental performance standards	Applies to the SSSTF.	NA
IDAPA 16.01.05.008 (40 CFR 264, Subpart I)	Use and management of containers	Applies to the SSSTF.	DOE/ID-11000, Section 4.3; DOE/ID-10851 (DOE-ID 2005d); DOE/ID-10865
IDAPA 16.01.05.008 (40 CFR 264, Subpart DD)	Containment buildings	Applies to the SSSTF.	DOE/ID-11000, Section 5
IDAPA 16.01.05.008 (40 CFR 264, Subpart BB)	Air emissions standards for equipment leaks	Applies to the SSSTF.	DOE/ID-11000, Section 3.1; DOE/ID-10865
IDAPA 16.01.05.008 (40 CFR 264, Subpart CC)	Air emission standards for tanks, surface impoundments, and containers	Applies to the SSSTF and evaporation pond.	DOE/ID-11000, Section 3.1; DOE/ID-10865
IDAPA 16.01.05.008 (40 CFR 264.221)	Surface impoundment design and operating requirements	Applies to the SSSTF and evaporation pond.	DOE/ID-11000, Section 4.6
IDAPA 16.01.05.008 (40 CFR 264.552)	Corrective action management units (CAMUs)	Applies to the evaporation pond.	DOE/ID-11000, Section 4.6
IDAPA 16.01.05.006 (40 CFR 262.34[a][1])	Hazardous waste accumulation time	Applies to the SSSTF.	DOE/ID-11000, Section 5
IDAPA 16.01.05.008 (40 CFR 264, Subpart F)	Releases from solid waste management units	Applies to closure and postclosure of ICDF Complex.	DOE/ID-10955; DOE/ID-10984, Section 9; DOE/ID-10998
IDAPA 16.01.05.008 (40 CFR 264, Subpart G)	Closure and postclosure	Applies to closure and postclosure of ICDF Complex.	DOE/ID-10984, Section 9

Table 4-2. (continued).

Alternative/ARARs citation	Description	Comments	Compliance Document
IDAPA 16.01.05.005 (40 CFR 261.20 through 24)	Hazardous waste characteristics identification	Applies to soils received from outside the WAG 3 AOC.	PLN-914; DOE/ID-11000, Section 4.1
16 USC 469 et seq. 36 CFR 65	National Archeological and Historical Preservation Act	Will be met during siting new excavations/construction in previously undisturbed areas.	NA
25 USC 3001	Native American Graves Protection and Repatriation Act	Will be met during siting new excavations/construction in previously undisturbed areas.	NA
IDAPA 16.01.05.005 (40 CFR 261)	Identification and listing of hazardous waste	Substantive requirements will be met for soils received from outside the OU 3-13 AOC.	PLN–914; DOE/ID-10865
IDAPA 16.01.05.006 (40 CFR 262.11)	Hazardous waste determination	Will be met for off WAG 3 materials prior to excavation by characterizing wastes from outside the WAG 3 AOC.	PLN–914; DOE/ID-10865

a. NA means that the ARAR is not applicable to the operational functions at the ICDF Complex.

AOC = area of contamination
CFR = *Code of Federal Regulations*
DOE = U.S. Department of Energy
ICDF = Idaho CERCLA Disposal Facility
IDAPA =Idaho Administrative Procedures Act
LDR = land disposal restriction
NESHAP = National Emission Standards for Hazardous Air Pollutants
PCB = polychlorinated biphenyl
SSSTF = Staging, Storage, Sizing and Treatment Facility
WAG = waste area group

5. WASTE UNIT DESIGNATION AND OPERATIONAL APPROACH

Several areas are designated in the ICDF Complex to facilitate operations of the ICDF Complex; these areas include the following:

- Staging and storage areas
- Decon building
- Truck in-transport area.

This section describes the waste units (staging and storage areas and decon building) and the operational approach for each. The final section describes the truck-in transport area.

In addition, an empty container staging area has been set aside to facilitate ICDF Complex operations. The empty container area (100 × 300 ft) may hold empty containers that meet free-release criteria such as roll-offs, waste boxes, etc. The empty container staging area is not a waste storage/staging area; therefore, it is not further discussed in Section 5.1.

The ICDF landfill and evaporation pond are also considered waste units of the ICDF Complex. The location and design standards for these units are provided in the ICDF RD/CWP (DOE-ID 2002a). The operational conditions associated with operation of the ICDF landfill and evaporation pond are provided in other sections contained within this ICDF Complex O&M Plan.

5.1 Staging and Storage Area Unit Designations

Wastes consolidated within staging piles operated in accordance with 40 CFR 264.554 are not considered storage, and placement will not occur provided the waste is removed within 2 years of the date that the waste was moved into the staging pile. This operational approach is important since it allows the ability to stage CERCLA waste during the winter months, when the ICDF landfill is not operational as well as staging solids requiring treatment pending availability of the treatment.

The use of storage and staging areas will allow sufficient flexibility to operate the ICDF Complex. These waste units will be placed within the fenced boundaries of the ICDF Complex. The staging areas will be managed in accordance with 40 CFR 264.554, and the storage areas will be managed in accordance with 40 CFR 262.34(a)(1). Stored containerized waste will meet the substantive requirements of 40 CFR 264, Subpart I, and aqueous waste stored in tanks will meet the substantive requirements of 40 CFR 264, Subpart J. Storage areas are shown in Figure 5-1. Profile cross sections of the bulk soil staging area within the ICDF Complex are shown in Figure 5-2.

ALARA practice may be implemented depending upon the waste, and waste will be stored, as necessary, using the dense pack configuration resulting in only one side being visible.

The staging and storage areas for the ICDF Complex will be designed and operated to satisfy the standards discussed in the remainder of this section.

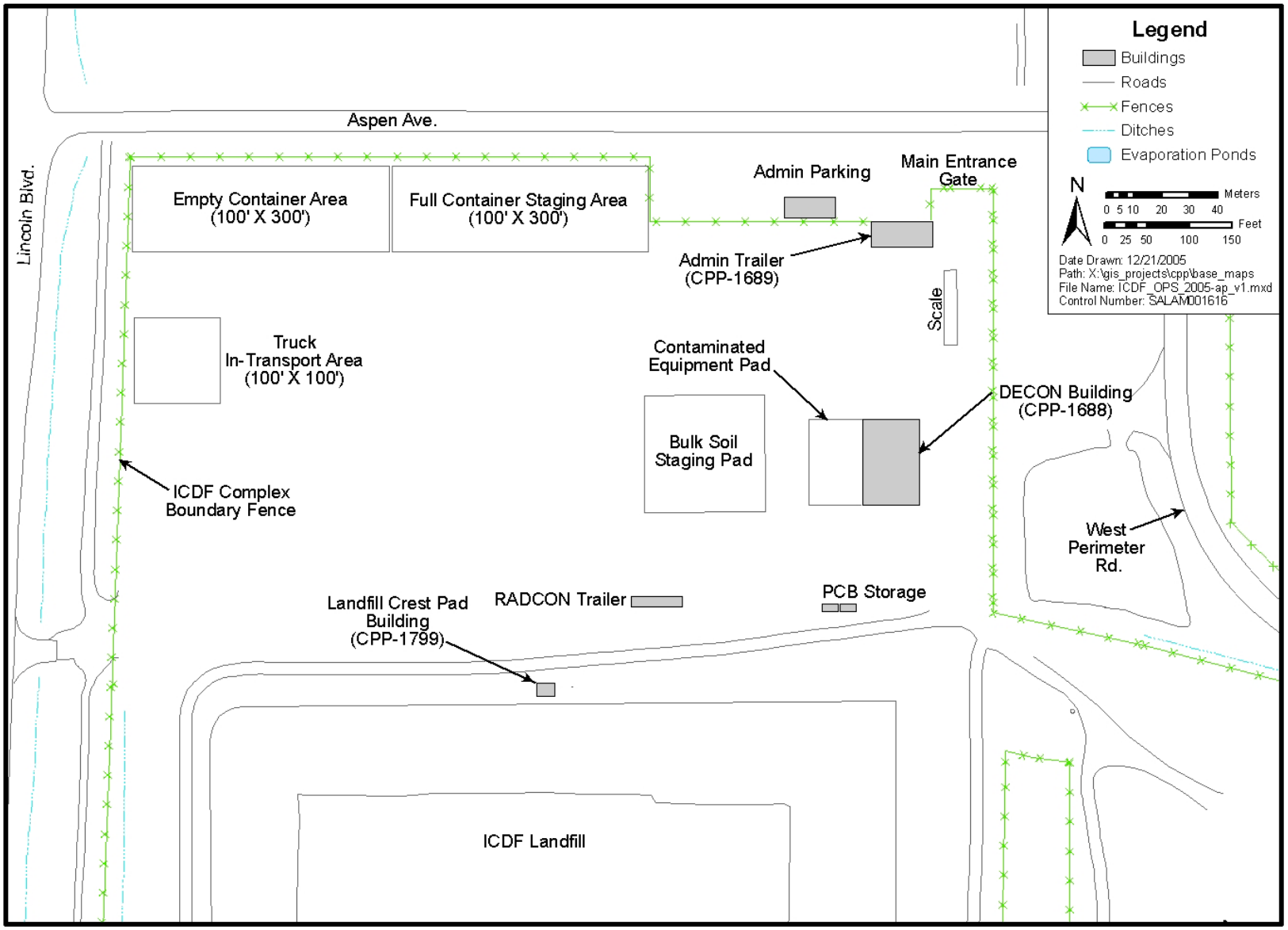


Figure 5-1. Site map and storage/staging area designation.

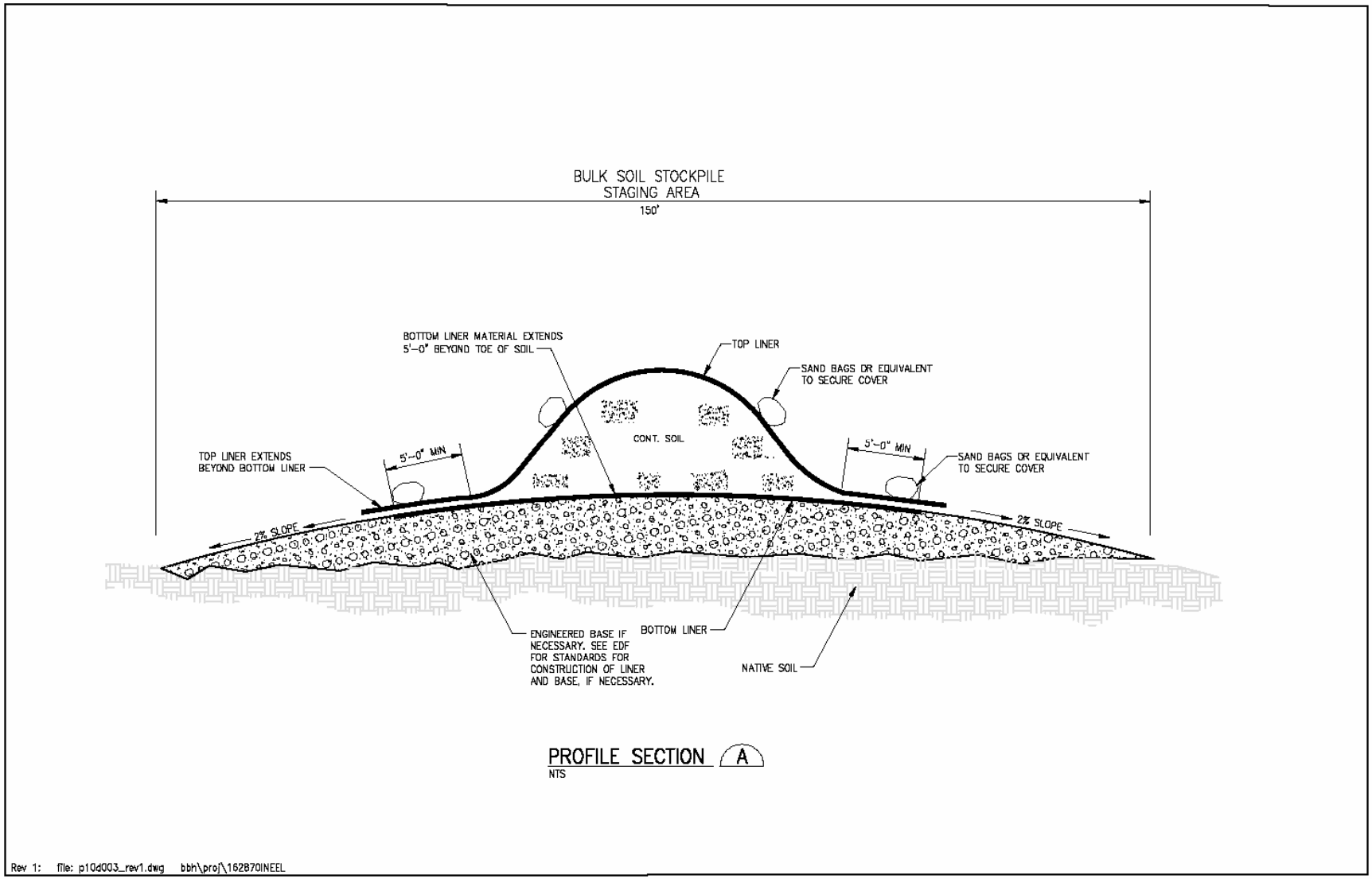


Figure 5-2. Profile section for waste storage/staging areas.

5.1.1 Location Standards

The following location standards have been identified for the staging areas:

- **Location at the ICDF Complex:** The staging and storage areas designated are within the limits of the ICDF Complex as identified in the ICDF Complex RAWP (DOE-ID 2005b).

- **Number:** Two staging areas: full container staging area, bulk soil stockpile staging area; and one storage area: tank and container storage area, are established to facilitate ICDF Complex operations.

- **Physical location:** Locations of the staging and storage areas are shown in Figure 5-1. A profile cross section of the bulk soil staging area within the ICDF Complex is shown in Figure 5-2.

5.1.2 Design Standards

Two staging areas: full container staging area, bulk soil stockpile staging area; and one storage area. Tank and container storage area are established to facilitate ICDF Complex operations.

A prefabricated storage container may be located at the ICDF Complex within the tank and container storage area for storage of PCB wastes. This container will be an enclosed portable unit with a steel roof and walls. The footprint of the storage area is approximately 10 × 20 ft (200 ft^2), with a usable storage capacity of approximately 5,000 ft^3. The prefabricated container will have loading ramps that will be connected following placement, and a built-in spill containment sump.

The following standards apply to the design of the waste units:

- **Hydrogeologic conditions** are the same throughout the ICDF Complex; therefore, all areas will utilize the same design.

- **Fenced areas:** The areas will be within the fenced area of the ICDF Complex, with the exception of the SSA, which is a separately fenced area within INTEC.

- **Boundaries:** The area will be roped off or fenced and posted with appropriate signs.

- **Physical dimensions:** Dimensions of the staging areas are shown in Figure 5-1.

- **Base material:** The base of the staging area will be the same as the base of the ICDF Complex infrastructure, which, as shown in Figure 5-2, includes sloped compacted gravel. Additional information regarding the liner material will be provided in an Engineering Design File (EDF) that discusses alternatives for protection of staging area liner systems (see run-on run-off controls).

- **Independent PE certification:** An independent professional engineer (PE) certification will be obtained for any tank(s) within a storage area, in accordance with the requirements of 40 CFR 264, Subpart J.

5.1.3 Operational Conditions

- **Designation:** Staging and storage areas are designated by this O&M Plan (Figure 5-1). Operations of the staging and storage areas will comply with the operational overviews for waste placement and tank management provided in Appendix A to this O&M Plan.

- **Waste tracking:** This O&M Plan provides for waste tracking throughout the ICDF Complex. Waste tracking in the staging and storage areas is performed in accordance with PLN-914.

- **Waste management in staging piles:** The wastes will not be added or removed during inclement weather (e.g., periods of precipitation, high winds). The working face and liner with waste soils will be covered at the end of each work day.

- **Time limits:** The time limit for staging wastes is 2 years per waste stream; it is then disposed or moved to an appropriate storage location. A request for a 180-day extension of the time limit may be submitted to the Agencies, provided sufficient and accurate information is included with the request that demonstrates the continued operation of the staging area would not pose a threat to human health and the environment, and is necessary to ensure timely and efficient implementation of remedial action. Waste placement and LDR issues may be applicable after the 2-year time period.

- **Permitted waste types:** Solid, nonflowing wastes are permitted in the staging areas. Storage areas are designated (see Figure 5-1) to receive aqueous wastes.

- **Incompatible wastes**, if any, may not be stored in close proximity.

- **Consolidation of waste:**

    - Nonflowing wastes may be consolidated within containers (e.g., roll-on/roll-off, drum, and waste box) within a staging area.

    - Waste may be consolidated within a designated staging area in soil piles on liners, with operational controls as are described in Appendix A of this O&M Plan.

    - Tanks may be placed in the tank and container storage area.

- **Run-on/run-off control:** Adequate run-on/run-off control is provided as part of the ICDF Complex design. Soils in the waste staging piles are to be managed in a manner to eliminate any potential run-on/run-off from entering the staging pile, or run-off from contacting the soils, thus eliminating the need to contain run-off. The staging piles will be designed (see Figure 5-2) as follows:

    - The soils pile shall be placed on an impervious liner. There will be at least a 2% slope away from the soil waste pile to ensure proper drainage.

    - The bottom liner material for the soil shall be of sufficient strength /design to withstand the planned staging and subsequent removal of soils. The technical specifications will be established in an EDF that discusses alternatives for protection of staging area liner systems that will include requirements for base material and equipment restrictions if necessary.

    - The bottom liner will extend at least 5 ft beyond every edge of the waste soil pile.

    - An impervious man-made material (cover) shall be used to cover the soil piles at all times that the soil is not being actively managed (placing, sampling, or removing waste). The cover must extend beyond the bottom liner and be secured to ensure that the staging pile soils are not exposed to the wind, precipitation, or elements.

    - The cover shall be an impervious material sufficient to withstand site conditions, (e.g., sun, wind, cold, heat, and movement to expose/cover the working face).

- **Fugitive dust control:** Staging piles that contain bulk waste will be covered with a tarp or impermeable material.

- **Inspections:** Section 8 of this O&M Plan and Procedure Overview 8.4 in Appendix A of this O&M Plan describe the inspection requirements for the staging and storage areas.

- **Containers:** Section 4 of this O&M Plan describes management of containers in staging areas.

- **Closure:** At the close of the active life of the ICDF Complex, all staging and storage areas will be closed in accordance with Section 9 of the RAWP (DOE-ID 2005b). Documentation of removal of the waste and elimination of the threat of release to the environment will be required.

5.2 Decontamination Building

The decon building has been designed and will be operated as a containment building in accordance with 40 CFR 264, Subpart DD. The following sections detail the location, design standards, and operational conditions for the decon building.

5.2.1 Location Standards

The decon building is located within the fenced area of the ICDF Complex, north of the landfill. There are no regulatory location standards for the decon building per 40 CFR 264, Subpart DD.

5.2.2 Design Standards

The decon building has been designed to meet the following requirements:

- **Completely enclosed** with a floor, walls, and a roof to assure containment of managed wastes.

- **Designed and constructed** of materials of sufficient strength and thickness to support the wastes.

- **Free-standing building** designed to withstand daily operation, including the movement of heavy equipment within the unit and contact of such equipment with containment walls.

- **HEPA and air filtration systems** that provide an effective barrier against fugitive dust emissions.

- **Manage** hazardous wastes containing free liquids or treated with free liquids, including:

    - Primary barrier designed and constructed of materials to prevent the migration of hazardous constituents into the barrier.

    - A liquid collection and removal system has been designed to drain liquids into the collection system and minimize the hydraulic head as soon as practical. A pump will discharge the waste into the evaporation pond via the pump station.

    - A secondary containment system is part of the building design. This system is constructed with a bottom slope of 1% or more and is constructed of a granular drainage material with a hydraulic conductivity of 1×10^{-2} cm/sec or more and a thickness of 12 in. (30.5 cm) or more, or constructed of geonet drainage materials with a minimum transmissivity of 3×10^{-5} m^2/sec. A liner is also present.

Independently qualified, registered PE certification will be obtained for the decon building.

5.2.3 Operational Conditions

The decon building will be operated to ensure that the following conditions are met:

- **Incompatible hazardous wastes** or treatment reagents will not be placed in the unit or its secondary containment if they could cause the unit or secondary containment system to leak, corrode, or otherwise fail
- **Decon building** will be kept free of significant cracks, gaps, corrosion, or other deterioration that could cause hazardous waste to be released from the primary barrier
- **Level of the stored/treated hazardous waste** within the containment walls of the unit will be maintained at a height less than the height of the decon building walls
- **Waste will be tracked** through the unit using IWTS. Decon and rinsate will be collected in the treatment room sump and decon bay trench and sent to the evaporation pond
- **Dust emissions** within the building will be controlled through the HEPA filtration and air filtration system
- **Notifications** will be in accordance with Section 9 of this O&M Plan
- **Inspections** will be in accordance with Section 8 of this O&M Plan.

5.3 Truck In-Transport Area

The truck in-transport area measures approximately 100 × 100 ft. The maximum number of trucks that can be held in the truck in-transport area is 25. The purpose of this area is to allow for truck parking until resolution of waste acceptance can be negotiated with the ICDF Complex user. Should conditions arise which prevent the off-loading or transportation of containers, the vehicle may be parked inside the truck in-transport area. Under normal conditions, this will not exceed 10 working days. If the discrepancy cannot be corrected within 10 working days, the waste will be returned to the generator, assuming the shipment back to the generator would not violate DOT regulations. The return of the waste to the generator will require the generating site to have the capability of accepting these returned wastes. If conditions arise which require the truck to remain at the ICDF Complex for more than 10 working days, the waste may be transferred into one of the approved staging or storage areas, provided the waste meets the requirements of the waste management area.

6. EQUIPMENT MAINTENANCE

ICDF Complex maintenance will be part of the ICP maintenance program which includes preventive, predictive, and corrective maintenance that ensures the availability and reliability of plant SSCs important to safe and productive facility operations. SSCs are classified, based on their importance in compliance with the ICP authorization basis, the unacceptability of their failure, and the likelihood that repetitive maintenance will be required.

6.1 Equipment Maintenance

Maintenance of ICDF Complex equipment falls into three categories that are discussed in the following sections:

- Preventive/predictive maintenance
- Corrective maintenance
- Calibrations.

ICDF-installed equipment will include leachate pumps, transfer pumps, level-sensing devices, flow meter/totalizers, truck scale, and the PLC computer system. Mobile equipment will include trucks, roll-on/roll-off containers, bulldozer, loaders, forklifts, and a water truck.

A more detailed list of equipment for ICDF Complex operations is in Appendix B of this document. Management of the wastes generated by maintenance activities will be guided by *INEEL CERCLA Disposal Facility Complex Operations Waste Management Plan* (DOE-ID 2003a), which can be found as Appendix G of the RAWP (DOE-ID 2005b).

6.1.1 Preventive Maintenance

Appropriate preventive maintenance/predictive maintenance (PdM) tasks are selected for SSCs, based on the importance of their classification, and a cost-benefit analysis focused on optimizing the life of the SSCs. Maintenance versus replacement, based on PdM techniques, is evaluated for cost-effective use, especially for SSCs that must be reliable and available for safe operations and mission accomplishment. When justified by a cost-benefit analysis, preventive maintenance tasks are established on a frequency to anticipate and correct conditions prior to SSC breakdown. SSCs for which preventive maintenance/PdM tasks are not cost-effective are allowed to run to failure with the concurrence of Facility Operations.

6.1.2 Corrective Maintenance

Corrective maintenance is the repair or rework of failed or malfunctioning equipment to restore the intended function or design condition. This maintenance does not result in a significant extension of the expected useful life of the equipment. When corrective maintenance is performed, the condition that causes failure in the equipment is analyzed to determine the cause of failure and identify the proper corrective actions to prevent recurrence.

6.1.3 Instrument Calibration

The goal of a calibration program is to ensure instrument readings are correct to within a determined tolerance. The ICP has a calibration program based largely on ANSI Z540-1. For the purposes of this section, the term "instrument" can also be interpreted to mean "instrument loop." An instrument loop is a group of instruments used to obtain a measurement. The major characteristics of the calibration program are as follows:

- Instruments have a calibration interval determined, then documented, in a database.
- Instruments are on a recall system that informs the instrument owner when the instrument is due for calibration.
- Instruments found out of tolerance are evaluated for possible actions. For example, if the instrument was used to develop information for a report, the report may need to be recalled or revised. Another possible action may be to decrease the calibration interval.
- The standard used is tracked. If a standard is found out of tolerance, then the instruments that were calibrated using that standard can be checked to ensure they are within tolerance.
- Standards generally have an accuracy four times better than the instrument. For example an instrument with an accuracy of 1% will be calibrated using a standard with an accuracy of 0.25% or better.
- Calibration results (as found and as left instrument readings or settings) are kept for reference.

Most calibrations involve the comparison of a standard to an instrument with adjustment made to the instrument if necessary. Nonadjustable instruments such as float switches also are included in the calibration program. While not a true calibration, instrument operation is verified at a set interval and records kept.

Data in the calibration program are controlled. New entries and changes to the calibration database are reviewed. There are two review levels, with set-point and range changes reviewed to a greater extent than other requested changes.

If an instrument is found out of tolerance and cannot be brought into tolerance or if an instrument has failed, it is taken out of service. When an instrument is taken out of service, labeling is installed to inform the operators that the reading should not be used.

Calibration/certification of the truck weigh scale will be performed by the Idaho State Department of Agriculture, Bureau of Weights and Measures.

6.2 Facility Maintenance

6.2.1 Building Maintenance

Routine maintenance activities for the admin trailer, decon building, and landfill and evaporation pond crest pad buildings will be performed by the operating Subcontractor per the Subcontractor's maintenance program. These activities include repairs to doors, windows, flooring, plumbing, roofs, and interior walls.

6.2.2 Heating, Ventilating, and Air Conditioning

The admin trailer will be supplied with a central heating and air conditioning system. The landfill and evaporation pond crest pad buildings will be equipped with radiant heaters and wall-mounted air conditioners to maintain a temperature range compatible with instrumentation requirements. The decon building will have radiant heaters in all rooms with no provision for cooling. Maintenance of these systems will primarily be achieved through the program of seasonal planning for winter and summer.

Winterization tasks will include inspection of all heaters, cleaning of enclosures to remove dust and debris, replacement of filters, functional tests of heating units and thermostats, and the covering of evaporation pond crest pad building wall-mounted air conditioners. Preparations for summer, to be completed between April and June, will include the removal of any covers installed for winter, inspection of air conditioners, cleaning of enclosures, changing of filters, and functional testing of units and thermostats.

6.2.3 Electrical Systems

Electrical switch gears, transformers, motor control centers, circuit breakers, etc. will be inspected by qualified craft persons on a frequency based on PdM evaluations. Repairs will be made as needed. The frequency of inspections will be determined by manufacturer's recommendations and/or Site maintenance program policies.

6.2.4 Lighting

An operational check of lighting systems will be made monthly. This will include the interior and emergency lighting inside all buildings and any exterior light fixtures. Repairs or bulb replacements will be made as needed. A work order may be prepared to correct lighting deficiencies noted in other facility inspections or by the operations staff by using the ICP maintenance program.

6.2.5 HEPA Filtration Systems

There are two HEPA filtration systems in the decon building. One services the decon bay and the other services the treatment area. Each system contains four prefilters and eight HEPA filters. A Sitewide program is responsible for the in-place testing of HEPA filters. Only trained and certified personnel perform in-place testing. HEPA systems are tested after installation, modification, repair, and at least annually thereafter.

Operational conditions/observations that will require the involvement of the INL HEPA Filter/Ventilation Group would include the following:

- High differential pressure of 5-in. water gauge or greater
- Reduction in differential pressure indicating a breach
- Occurrence of a fire or an off-normal chemical release into the ventilation system
- Apparent air flow restrictions
- Any suspected problems with the filter system.

HEPA testing and filter changeout will be performed in accordance with Section 10 of ASME N510, subject to concurrence by the FFA/CO Agencies. If wetting is suspected, the filters will be evaluated and replaced as necessary in accordance with applicable INL procedures.

Servicing of the exhaust fans, drive motors, and instrumentation will be based on PdM evaluations. Corrective maintenance will be performed through the ICP maintenance program.

6.2.6 Treatment Equipment

Treatment equipment includes a box tipper, mixing unit with discharge capability, stabilization agent feeding apparatus, fugitive dust control equipment including prefilters and a bank of HEPA filters, and a grout mixing/injection unit for debris treatment. Additional equipment may include pallet jacks or other equipment for moving containers.

Preventive maintenance activities include lubrication of bearings and rollers, changing gearbox fluids, and inspection and replacement of filters.

6.2.7 Water Systems

The ICDF Complex has three types of water sources from INTEC: potable water, fire water, and raw water. All are branch connections from INTEC systems with isolation valves at the connection points.

Other than periodic flow tests and inspections of the fire protection post-indicator valves and hydrants, no regular ICDF maintenance activities are anticipated.

6.2.8 Sanitary Sewage System

Sanitary sewage will be collected from the admin trailer and decon building in a common sump equipped with two pumps and ultrasonic level instrumentation. Sewage will be transferred under pressure to a sewer main inside INTEC. The pump control panel will have a trouble alarm light. A cost-benefit analysis will determine if the pumps and level instrumentation will receive preventive maintenance or if they will be operated to failure and then replaced.

6.2.9 Evaporation Pond Lining System

The liner repair instructions are presented in the Technical Specifications for the ICDF (SPC-1476). Relevant sections include the following:

- Separation and cushion geotextile repair is in Section 02371
- Sacrificial and primary geomembrane repair is in Section 02661
- Primary and secondary geosynthetic clay liner (GCL) repair is in Section 02667.

6.3 Grounds and Perimeter Maintenance

Monitoring of the grounds and perimeter fences will be accomplished through the weekly landfill and evaporation pond inspections. Maintenance activities will include the following:

- Repair of fences

- Repair/replacement of warning or directional signs
- Weed and debris removal from storm run-off ditches
- Removal of vegetation and debris from around fences and buildings for fire prevention
- General housekeeping of storage areas and equipment pads
- Snow removal from access routes, equipment pads, and storage areas
- Placement/spreading of snow-melt or dry sand in pedestrian traffic areas.

6.4 Spare Parts and Special Tools

The preparation of spare parts lists and special tool requirements will be accomplished as the manufacturer's data are received. The facility engineer and facility manager will review the complete spare parts list and identify those parts or tools that should be added to the material inventory system. Procurement, storage, and utilization of spare parts will be in accordance with the operating Subcontractor's maintenance program.

Spare parts that can directly impact the protectiveness of the remedy are listed in Appendix B (Table B-2) of this document.

7. FACILITY CONFIGURATION CONTROL

An effective operational configuration management (CM) program involves the consistent identification of items requiring configuration control, management of requirements and documentation applicable to the items, and control of changes to those items.

The cumulative benefits of a CM program include increased safety and reliability, improved environmental protection, and a reduced potential for extended shutdowns through the following:

- Improved availability and retrievability of accurate information to support safe, sound, and timely, decisions related to design, construction, fabrication, maintenance, and operations
- Enhanced worker safety by providing assurance that equipment will perform as intended and by reducing exposures to unknown hazards due to equipment being in the wrong configuration
- Increased efficacy by ensuring the prompt availability of needed information, thereby preventing errors and resultant rework, reducing duplication of effort, and improving scheduling and planning estimates.

7.1 Physical Equipment

Equipment and piping that are installed as permanent fixtures in operating facilities must be labeled to ICP standards. Components requiring labeling include valves, major equipment, switches, circuit breakers, fuse blocks or fuse locations, instruments and gauges, buses and motor control centers, electrical cabinets, room doors, emergency equipment, fire protection equipment, and piping. Operations procedures will identify equipment as it is labeled in the facility.

Labels will be placed on, or as near as possible, to the equipment to be labeled. The label will be oriented in a manner that is easy to read and should not interfere with equipment operation or obscure indicators. Piping will be labeled to indicate the fluid contained and the normal flow direction.

Equipment information and specific data for each item determined to be under configuration management are entered into the configuration management database. These data include the location of the item, manufacturer, safety category, service status, associated drawings, and any associated documents.

7.2 Drawings

Drawings are developed, assessed, and maintained to ensure they portray technically correct and approved design information in support of operations and maintenance. Drawings are controlled by the Sitewide Document Management Control System (DMCS). Changes to a drawing may only be made using the Document Action Request (DAR) form process. If the drawing is included in a primary document under the FFA/CO, the change must also receive concurrence from EPA, DEQ, and DOE-ID PMs.

A proposed change must, at the minimum, be reviewed and approved by the project engineer, project manager, and site area engineering manager. The project manager may request additional reviews/approvals by subject matter experts (SMEs). The completed revision to a drawing is reviewed and approved by the disciplines identified by the project manager.

Drawings are classified as “essential,” “master facility,” or “other” by the project engineer with the concurrence of the project manager.

An essential drawing has been deemed necessary for the safe operation and maintenance of a facility and the protection of workers, the environment, or the public. An example of an essential drawing is a piping and instrumentation diagram (P&ID), electrical one-line, or an electrical panel schedule. A master facility drawing has been selected as necessary for the routine operations and maintenance of a facility. A master facility drawing would be a building lighting plan or detailed piping plan. An “other” drawing would be a floor plan or building structure.

An “interim” drawing is used to maintain an essential drawing in the as-built condition during a system modification. An example would be issuing an interim drawing of an electrical panel showing the addition of a new circuit breaker to maintain the as-built condition of the essential drawing until the drawing revision can be issued.

7.3 Instrument Calibrations

ICDF uses the INL-integrated Sitewide calibration program based on ANSI Z540-1. Data for instruments that will be calibrated are maintained in a controlled database. Calibration frequency and tolerances are based on the manufacturer’s recommendation and/or applicable national standards.

All calibrated process instruments will have a sticker that indicates when the next calibration is due. This information also will be contained in the calibration program database.

Radiation measurement instrumentation calibrations are maintained by the Health Physics Instrumentation Laboratory (HPIL).

7.4 Facility Changes/Modifications

Proposed changes to facilities or systems are reviewed by the engineer to determine if the Facility Change Form (FCF) process is applicable. The FCF is the Sitewide method for tracking an engineer change. It is used for the following:

- Describing the proposed engineering change
- Documenting activities associated with the design of the modification
- Authorizing the change
- Identifying required safety and environmental reviews
- Recording the review of the change
- Identifying the document affected by the change
- Tracking the implementation of the change into all affected documents
- Ensuring that the modification is signed off as completed.

Routine maintenance activities, such as the like-for-like replacement of a pump or instrument, do not require an FCF. Physical changes to a system, such as adding a valve or installing a larger pump, do require an FCF. Changes to computer systems, hardware and software, are controlled by a separate program that is discussed in Section 7.6 of this document.

If the proposed changes require a change to a primary FFA/CO document, a DAR will be completed and sent to the Agencies for approval.

7.5 Procedures

The operating subcontractor develops Standard Operating Procedures (SOPs) to govern the performance of work at the facility. SOPs are prepared by the subcontractor and reviewed and approved by the ICP Operations Project Manager. Modifications to the SOPs require the same level of review and approval as the original.

7.6 Computer Hardware and Software Programs

The data collection system is based on equipment (hardware) that must be configured (programmed). The configuration, among other things, determines what is displayed on the HMIs, when alarms occur, what information is archived, how devices are interlocked, and when pumps are automatically turned on. Therefore, it is necessary and proper that the hardware and configuration (software) changes be controlled. The ICP has procedures that require configuration management of software. In addition, the data collection system has a Configuration Management Plan (CMP) that deals with the system in detail. From the configuration management plan viewpoint, the system consists of three parts: hardware, software, and set points.

The major system hardware components have been given equipment names.

The hardware is controlled and tracked using an equipment database. Information access (input and removal) requires the completion of a form that is reviewed and approved by a facility engineer.

The configuration access is controlled with two levels of passwords. The passwords prevent unauthorized persons from gaining access to the configuration. The higher password level is the system manager who has access to all parts of the configuration. The lower level of access is instrument technician. This level only allows access to the control set-point values.

NOTE: *Operating considerations may require that operators be allowed access to certain set points. This practice is discouraged, however, and is not general operating practice.*

Copies of the software configuration are required to be kept. Individual changes to the software require completion of a form. The form must be approved before changes to the configuration can be made.

Set points are controlled as part of the calibration program. The calibration information (including set points) is kept in a database. The set points are controlled though the use of forms. The forms go though an approval process. Once the forms are approved, the calibration information in the database is changed and the instrument technician can change the value in the ICDF Complex data collection system configuration.

7.7 Training Qualifications and Records

The Sitewide Training Records and Information Network (TRAIN) database maintains the training records for all ICP and subcontract employees. These data are available to all employees via the ICP intranet. Computer-based training classes are recorded in TRAIN as soon as the session is completed. Classroom courses are usually uploaded by the next working day. This allows operations supervision to easily confirm the qualification status of employees. Notification is also sent to the facility training coordinator of qualifications that are coming due for all staff. The ICDF Complex HASP, Table 6-1, has all the training requirements by position (INEEL 2004).

7.8 Document Control Records Management

Management of records is performed by a Sitewide system. A Uniform File Code list has been developed for the proper filing and retention of record material. This system is utilized for hardcopy and electronic media. Additional information on record management is in Section 10 of this document.

8. INSPECTIONS

This section describes the various inspections that will be performed at the ICDF Complex as a part of routine O&M. The information is subdivided into sections that describe ICDF Complex inspections, landfill inspections, evaporation pond inspections, waste storage/staging inspections, decon building inspections, and tank inspections.

8.1 ICDF Complex Inspections

The required inspections for the ICDF Complex will be conducted during the facility's operations. These inspections cover all operations of the Complex and are not specific to any one operation. Inspections will be performed weekly, unless otherwise noted, and will be documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format.

The ICDF Complex perimeter and inside fences will be inspected to ensure that fences are in good condition, that there is no buildup of wind-blown material, that gates are functional and closed when not in use, that locks are in working order, and that perimeter warning signs are properly placed and in good condition.

Following a significant storm event (defined as one half of the 25-year, 24-hour event, which is 0.85 in. in 24 hours, as measured at CFA) the following will be performed within 24 hours following the storm or, in the case of a weekend, holiday, or planned cessation of operations, during the next business day:

- The ICDF Complex access and haul roads will be inspected for severe erosion of roads or embankments (defined as measurable gullies and erosion channels in excess of 6 in. deep), for evidence of spills, and for adequate drainage, to ensure that the roads are in a condition to allow safe operation

- The ICDF Complex storm water runoff control ditches will be inspected to ensure the following:

    - Ditches are free of obstructions

    - Culverts are open and free of solid material

    - Drainage is not impeded

    - Runoff is being directed to the intended areas

    - There is no evidence of severe erosion to the ditches or culvert headwalls nor evidence of overflow from the ditches.

The ICDF Complex will be inspected daily for effectiveness of dust suppression controls.

Further details regarding the ICDF Complex inspections can be found in Appendix A of this O&M Plan. It should be noted that these are minimum requirements.

8.2 Landfill Inspections

The required inspections for the ICDF landfill will be conducted during the operation of the landfill. Landfill inspections will be performed weekly, unless otherwise noted, and following a significant storm event that may impact the safe operation of the landfill (40 CFR 264.303[b]).

Inspections following a storm or other event will be conducted within 24 hours following the storm or, in the case of a weekend, holiday, or planned cessation of operations, during the next business day.

Inspections will be documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format. Inspections will be performed to determine the following:

- Deterioration, malfunctions, or improper operation of run-on/run-off control systems
- The presence of leachate in the collection and removal systems during operations and closure/postclosure
- Condition of level transducer to ensure it is operational so that the depth of leachate does not exceed 1 ft
- Proper functioning of the Leachate Collection Recovery System (40 CFR 264.303), or errors and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15[a])
- Condition of the landfill benchmarks that delineate the landfill perimeter (inspected annually) to ensure permanence
- The effectiveness of soil fixative on exposed waste areas for dust control.

Further details regarding the ICDF landfill inspections can be found in Appendix A of this O&M Plan.

Inspection requirements for the ICDF landfill crest pad building, including but not limited to structural elements, HVAC, sumps, pumps, alarm systems, instrumentation, and mechanical systems, are detailed in Appendix A of this O&M Plan.

8.3 Evaporation Pond Inspections

The required inspections for the ICDF evaporation pond will be conducted during the operation of the evaporation pond cells. Inspections will be made weekly and following significant storms, including sustained wind in excess of 35 mph (40 CFR 264.226[b]), and will be documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format. Inspections following a storm or other event will be conducted within 24 hours following the storm or, in the case of a weekend, holiday, or planned cessation of operations, during the next business day.

Inspections will be performed for malfunctions and deterioration, improper operation of overtopping control systems, water level fluctuations, severe erosion or other signs of deterioration of dikes and other containment devices, and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15[a]; 40 CFR 264.226 [b][1,2,3]). During these inspections, personnel will conduct the following activities:

- Inspect and record the water level of both pond cells (40 CFR 264.226 [d][1])]
- Inspect to ensure that the minimum of 2 ft of freeboard (the distance from the water surface to the top of the berm) is being maintained
- Inspect to ensure the ballast tube system is intact

- Inspect for evidence of liner wind lift in empty areas.

Further details of the ICDF evaporation pond inspections can be found in Appendix A of this O&M Plan.

Inspection requirements for the crest pad buildings, including but not limited to structural elements, HVAC, liquid level in sumps, pumps, alarm systems, instrumentation, and mechanical systems, are detailed in Appendix A of this O&M Plan.

8.4 Waste Storage/Staging Inspections

The required waste storage/staging inspections will be conducted during the operation of the waste storage/staging areas as defined in Section 5 of this O&M Plan. Inspections will be performed weekly, unless otherwise noted, and following a significant storm event, including sustained wind in excess of 35 mph or other event that may impact the safe operation of the staging areas. Inspections will be documented through the use of logbooks, checklists, or other appropriate electronic or hardcopy format. Further details of waste storage/staging area inspections can be found in Appendix A of this O&M Plan.

Inspections will be performed for malfunctions and deterioration, operator errors, and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15 [a] and [c]).

Waste storage/staging area inspections will not be performed when there is not waste stored or staged within the designated area.

All waste storage/staging areas identified in Section 5 of the O&M Plan will be inspected for the following:

8.4.1 Area Management

- There is adequate aisle space for personnel and equipment to respond to emergencies and/or conduct inspections
- All wastes are segregated within the area to maintain requirements for compatibility
- Quantities/containers recorded in the logbook equal quantities/containers staged in the area
- Staged wastes have not been staged for more than 2 years or have submitted a justification for the extension.

8.4.2 Spills and Leaks

- Areas will be inspected for leaks and deterioration (40 CFR 264.174). Pads will be inspected for integrity.

8.4.3 Containment

- Containers staging liquids have secondary containment or are otherwise prevented from discharging through dikes or berms
- Tarps over soil piles are secure

- Liners under soil piles, where necessary, are placed and functioning to provide isolation of the pile
- Dikes, berms, or pad design restrict run-on precipitation from entering staging areas.

8.4.4 Labeling

- All containers and bulk soil in the waste storage/staging areas will be inspected for proper signage and labeling depending upon the waste type
- All container and bulk staging area labels, signs, and marks are visible to the inspector.

8.4.5 Containers

- Containers staged at the ICDF Complex will be inspected at least weekly for leakage and deterioration (40 CFR 264 Subpart I).

8.4.6 Emergency Response

- Emergency procedures as defined in the HASP (INEEL 2004) are present.

8.5 Decon Building Inspections

The required decon building inspections will be conducted during the operation of the decon building. As required by 40 CFR 264.1101(c)(4), the decon building shall be inspected every 7 days. The decon building has been designed to meet 40 CFR 264, Subpart DD, for containment buildings. The building will be operated and maintained per 40 CFR 264, Subpart DD. The inspection for the treatment unit within the decon building will be in accordance with this section. The inspections will be recorded in the facility's operating record and entail the following activities:

- Inspect and record data gathered from monitoring equipment and leak detection equipment, as well as the containment building and the area immediately surrounding the containment building, to detect signs of releases of hazardous waste (40 CFR 264.1101[c][4])
- Inspect for errors and discharges that may lead to the release of hazardous constituents or threat to human health (40 CFR 264.15[a]).

Further details regarding the decon building inspections can be found in Appendix A of this O&M Plan.

8.6 Tank Inspections

The required tank inspections will be conducted during the operation of the ICDF Complex. Daily inspections will be performed, if no leak detection system is installed, for the following:

- Aboveground portions of the tank system, if any, to detect signs of corrosion or releases of waste.
- Crest pad building sumps, pump station, and decon building tank system to determine the water level.

- Data gathered from monitoring and leak detection equipment to ensure that the tank system is being operated according to its design.

- The construction materials and the area immediately surrounding the externally accessible portions of the tank system, including the secondary containment system, to detect erosion or signs of releases of hazardous waste.

- For tanks in the Tank and Container Storage Area, the liquid level in the secondary containment may have small fluctuations in the level because it may have an open top containment. Evaporation, precipitation, and liquid removal should be the only normal contributing factors in the liquid level. If the liquid level in a primary tank deviates from the recorded level, and there was no waste added or removed from the tank, then investigate the suspected leak.

  Further details on tank inspections can be found in Appendix A of this O&M Plan.

8.7 Corrective Actions

Actions that may precipitate releases of hazardous substances into the environment will be corrected within a timeframe proportional to/determined by the release. For example, sustained overtopping of the evaporation pond due to wind-driven spray must be addressed immediately through spill cleanup and reducing freeboard as much as practical. In another example, cracks in a pad adjacent to stored wastes should be repaired prior to using that portion of the pad. Depending on the nature of the stored wastes, appropriate interim measures may be necessary prior to completing the repair (e.g., placement of absorbents and/or increased inspections).

Minor deficiencies will be corrected as soon as practical to prevent cumulative effects that could lead to a potential release. For example, observations of labeling deficiencies, such as incomplete, illegible, damaged, or missing labels, represent a programmatic problem that must be corrected. Repeated minor deficiencies will be evaluated for root cause and appropriate actions developed to eliminate the cause prior to escalation of the problem.

9. NOTIFICATION AND SUBMITTALS

During the operational life of the ICDF Complex, numerous notifications and data submittals will be required. The FFA/CO outlines the procedures for submission of such data to the DEQ and EPA. The ARARs determine the specific data/notification requirements. In addition to routine data submittals, such as annual reports, data must be submitted as follows: in the event of landfill or evaporation pond leakage, as described in Section 9.1.1; in the event of tank leakage, as described in Section 9.1.2; or in the event of decon building leakage, as described in Section 9.1.3, as required.

The ICDF Complex management will provide verbal notification to the Agencies for those activities outlined in this section that require notification at the time of an incident requiring corrective action. Resulting reports will be made to the regulatory Agencies for these instances. It is the intent of the ICDF Complex management to involve the Agencies in any substantive corrective actions and compliance issues as soon as practical; however, circumstances may arise which require ICDF Complex management to initiate corrective actions immediately. The following is a discussion of events that would require data submittals.

9.1 Spills and Releases

The following sections describe spill and release events that may occur as part of the ICDF Complex operations and the necessary notifications and or submittals for these events.

9.1.1 Landfill or Evaporation Pond Leakage

The Leachate Collection Recovery System (LCRS) is located immediately above the uppermost composite liner of the landfill bottom liner system, and a Leak Detection and Recovery System (LDRS) is located beneath both composite liners of the landfill. The LDRS is the uppermost leak monitoring system (located just below the primary liner) which will be monitored continually for leaks. Beneath the lower composite (secondary) liner is the SLDRS. The LDRS must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and postclosure care period. The SLDRS monitors leaks from beneath a portion of the bottom liner system in the area of leachate collection piping and sump. Only the LDRS has an ALR established for its operation. The ALR sets action levels for performance requirements of the primary liner system.

The evaporation pond cells also have a LDRS located between their primary and secondary liners. Like the landfill LDRS, the LDRS for the pond must be capable of detecting, collecting, and removing leaks of hazardous constituents at the earliest practicable time through all areas of the top liner likely to be exposed to waste or leachate during the active life and postclosure care period. The LDRS for the evaporation pond has an established ALR, which sets the performance requirements for this system.

A requirement of 40 CFR 264.302(b) is that the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under 40 CFR 264.303(c) to an average daily flow rate (gal per acre per day) for each sump, in order to determine whether the ALR has been exceeded. The average daily flow rate for each sump must be calculated weekly during the active life and closure period, and monthly during the postclosure care period when required under 40 CFR 264.303(c).

If the flow rate into the LDRS of the landfill or LDRS of the evaporation pond cells exceeds the ALR for any sump, the ICDF Complex management and DOE-ID must perform the following schedule of Agency notifications:

- ICDF Complex management will notify DOE-ID at the time the flow exceedence of the ALR is identified.

- DOE-ID will provide written notification (e.g., email, fax) to DEQ and EPA that the flow is determined to have exceeded the ALR as soon as practical (not to exceed 7 days) after making the determination.

- DOE-ID will provide written information of the incident to DEQ and EPA, regarding the amount of liquids; possible location, size, and cause of any leaks; and short-term actions taken and planned. The information will be provided within 14 days of the determination.

- DOE-ID, in consultation with DEQ and EPA, will prepare a corrective action plan detailing the results of analyses, actions taken, and actions planned.

- As long as the flow exceeds the ALR, DOE-ID will prepare and submit monthly written notice to DEQ and EPA detailing additional actions taken and actions planned.

Operational procedures and inspections for the leak detection systems of the landfill and evaporation ponds are located in Appendix A.

9.1.2 Tank Leakage or Spills

Several tanks exist at the ICDF Complex including:

- Pump station

- Decon building tank system:

  - Concrete P-trap

  - Oil/water separator

  - Ancillary piping

- ICDF Complex storage tank(s).

A tank system that is part of the ICDF Complex from which there has been a leak or spill or is unfit for use must be removed from service immediately. The contents of the leaking tank may require removal to another tank, or, if acceptable, to the evaporation pond. The ICDF Complex management will report any leak, spill, or release through existing ICP channels. Spill reporting is discussed in the HASP (INEEL 2004). In addition, periodic Agency conference calls will discuss upset conditions. If the release has been reported pursuant to 40 CFR 302, that report will satisfy this requirement. A leak or spill of hazardous waste is exempted from the requirements if it is less than or equal to the reportable quantities and immediately contained and cleaned up. The ICDF Complex will use the same spill reporting and reportable quantities that are used throughout the INL.

9.1.3 Decon Building Leakage

If a release of hazardous waste from the decon (containment) building has been detected, the following actions must be taken by DOE-ID (40 CFR 264.1101):

- A record of discovery must be filed in the ICDF Complex operating record
- Immediately remove the portion of the decon building affected by the condition from service
- Determine what steps must be taken to repair the decon building, remove any leakage from the secondary collection system, and establish a schedule for accomplishing the cleanup and repairs.
- Notify the EPA and DEQ of the condition and provide a written notice with a description of the steps taken to repair the decon building and the schedule for accomplishing the work. Notifications will be performed as soon as practical, but not to exceed 7 days.

Upon completing all repairs and cleanup, the DOE-ID must notify the Agencies in writing and provide verification, signed by a qualified, registered professional engineer, that the repairs and cleanup have been completed according to the written plan submitted in accordance with 40 CFR 264.1101(c)(3)(i)(D).

9.2 Sampling Events and Data Submittals

Several routine sampling events will occur at the ICDF Complex, which will require submittals of the data. The routine monitoring, analyzing, and reporting of groundwater data will be conducted for the ICDF Complex. The groundwater monitoring process is discussed in the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004).

9.2.1 Groundwater Monitoring Data Submittals and Notifications

The ICDF Complex will conduct a detection monitoring program in the SRPA in accordance with 40 CFR 264.97(g) and the *ICDF Complex Groundwater Monitoring Plan* (DOE-ID 2004). The ICDF Complex will maintain a record of groundwater analytical data as measured and in a form necessary for the determination of statistical significance under 40 CFR 264.97(h). For further information regarding the groundwater monitoring programs, see the ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003c) and Groundwater Monitoring Plan (DOE-ID (2004). Data submittals and notifications are summarized in Table 9-1.

Although water quality is not part of the detection monitoring program at this time, it also will be monitored (concurrently) in the perched water and data reported to the Agencies in accordance with the FFA/CO. During routine monitoring of the SRPA, water levels will be checked in the perched water wells. If sufficient water is available, samples will be collected in accordance with the ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004). If the decision is made by the Agencies that it is appropriate to add the perched water wells to the detection monitoring network, the ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003c) will be modified.

Table 9-1. Site sampling/data submittal summary.

Document Where Data Submittal is Required	Sample Area	Sampling Locations	Media Type	Agency Submittal
ICDF Complex Waste Profile and Verification Sample Guidance (DOE-ID 2005c)	INL	Varies[a]	Waste soil - source material	Data maintained in ICDF Complex project records[b]
ICDF Complex SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003d)	ICDF Complex	Treatment unit by batch	Waste soil - treated material	Data maintained in ICDF Complex project records[b]
ICDF Complex Operational and Monitoring Sampling and Analysis Plan (DOE-ID 2003b)	ICDF Complex	Evaporation pond	Pond water and sediment	Annual report
	Evaporation pond	Leak Detection Recovery System	Leachate	Data maintained in ICDF Complex project records[b]
	Landfill	Leak Detection Recovery System	Leachate	Data maintained in ICDF Complex project records[b]
	Landfill	PLDRS sump SLDRS sump	Leak detection liquid	Data maintained in ICDF Complex project records[b]
ICDF Complex Groundwater Monitoring Plan (DOE-ID 2004)	SRPA wells	USGS-123, ICPP-1782, ICPP-1783, ICPP-1800, ICPP-1829, and ICPP-1831	Groundwater	Data submitted in accordance with FFA/CO Annual report
	Perched water wells	PW-1, PW-6, ICPP-1781, ICPP-1801, ICPP-1802, ICPP-1803, ICPP-1804, and ICPP-1807	Groundwater	Data submitted in accordance with FFA/CO Annual report

Table 9-1. (continued).

Document Where Data Submittal is Required	Sample Area	Sampling Locations	Media Type	Agency Submittal
ICDF Groundwater Detection Monitoring Program: Data Analysis Plan (DOE-ID 2003c)	SRPA wells	SRPA wells	SRPA water	Upon identification of statistically significant difference – Agency conference call and follow-up report

a. Sampling location is dependent upon the source of the material and the key parameter properties.

b. Data will be submitted in accordance with Section XIX of the FFA/CO (DOE-ID 1991).
FFA/CO= Federal Facility Agreement and Consent Order
ICDF = Idaho CERCLA Disposal Facility
PLDRS = Primary Lead Detection and Recovery System
SAP = Sampling and Analysis Plan
SLDRS = Secondary Leak Detection and Recovery System
SRPA = Snake River Plain Aquifer

9.2.2 Nongroundwater Monitoring Data Submittals and Notifications

In addition to groundwater, other media such as waste soil, pond water and sediment, and leachate will be sampled. Several documents discuss this sampling: the ICDF Complex SAP for SSSTF Waste Stabilization Operations (DOE-ID 2003d), *ICDF Complex Waste Profile and Verification Sample Guidance* (DOE-ID 2005c), and ICDF Complex Operational and Monitoring SAP (DOE-ID 2003b).

Table 9-1 indicates sampling at the ICDF Complex for a variety of purposes, as discussed in the documents referenced directly above. The table provides a summary of the media that will be sampled under each SAP and indicates whether a data report will be developed and submitted to DEQ and EPA. Sampling data that are collected but not submitted in a report to DEQ and EPA will be maintained in the ICDF Complex project records and the data packages will be sent to DEQ and EPA in accordance with Section 19 of the FFA/CO (DOE-ID 1991).

9.3 Operational Reports

Operational reports are reports that are not submitted to the DEQ or the EPA but are kept onsite in the ICDF Complex records. An example of this information is an inspection checklist, as discussed in Section 8, Inspections. Other information, including dike structural certification, tank certification, and operating record with location of waste, is discussed below.

9.3.1 Waste Generation and Tracking

Documentation of the source of the waste streams and locations in the landfill where the waste was placed will be kept in the project files.

9.3.2 Complex Facility Operations

Records of daily ICDF Complex facility operations must be kept. Examples of record topics are sample/shipping and field instruments calibration/standardization.

9.3.3 Individual Units (Landfill, Evaporation Pond, Staging Area)

Examples of reports for individual units are evaporation pond dike structural certification, tank certification, and instrument inspection checklists. These, and any other operational reports, will be kept in the project files.

9.4 Emergency Response and Alarm Operation

The ICDF Complex personnel will be prepared to respond to many different kinds of emergencies. The following are general descriptions of actions the ICDF Complex management/personnel will perform to demonstrate emergency preparedness:

- Ensure that personnel are dedicated and trained to investigate and report events and conditions effectively and in a timely and unbiased manner

- Ensure that the timely and appropriate response action to stabilize and mitigate the event is appropriate and commensurate with training and qualification

- Categorize and make notifications to designated organizations and the Agencies, if required
- Prepare investigation and notification reports and provide event closure and root cause information to correct the condition and prevent recurrence
- Provide lessons learned and address additional training needs as needed.

10. RECORDS MANAGEMENT

Records created, received, or maintained by the ICDF shall be managed according to Management Control Procedure (MCP) -557, “Managing Records.”

11. REFERENCES

10 CFR 61, 1999, "Licensing Requirements for Land Disposal of Radioactive Waste," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

10 CFR 835, 1999, "Occupational Radiation Protection," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

10 CFR 835, Subpart C, 1999, "Standards for Internal and External Exposure," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

10 CFR 835.101, 1999, "Radiation Protection Programs," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

10 CFR 835.901, 1999, "Radiation Safety Training," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

40 CFR 61, 1999, "National Emission Standards for Hazardous Air Pollutants," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

40 CFR 61, Subpart H, 1999, "National Emission Standards for Emissions of Radionuclides other than Radon from Department of Energy Facilities," *Code of Federal Regulations*, Office of the Federal Register, July 1999.

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Appendix A

Procedure Overviews

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Cleaning of the Decon Building Concrete P-Trap and Contaminated Equipment Pad Trench

Prepared by	Tracking No.
R. C. Shilkett	1.2.3.1
Date	Revision
October 28, 2002	0

1. PURPOSE

The purpose of this procedure is to address the removal and disposition of accumulated sludge, sediment, and debris from the contaminated drain system including the concrete P-trap located in the floor of Room 112 of the decon building.

2. SCOPE AND APPLICABILITY

This procedure applies to the drainage trench in the contaminated equipment storage pad through the concrete P-trap in the decon building.

3. REGULATORY REQUIREMENTS

None identified.

4. EQUIPMENT

- Equipment, as needed, to remove trench grating sections for cleaning
- Submersible sump pump for removal of liquid above the sediments
- Positive displacement “mud pump” for removal of sediments and liquid
- Collection containers for sediments and liquids
- Absorbents, if needed
- Miscellaneous hand tool
- An oil/water interface level indicator or semiclear bailer.

5. IMPLEMENTATION

The concrete P-trap will be cleaned when >12 in. of material (approximately 15–20 ft^3) has accumulated in the bottom of the trap or when deemed necessary by ICDF Operations. Cleaning of the contaminated equipment pad trench will be performed when there is a sufficient accumulation of sediment and/or debris to impede flow or when deemed necessary by ICDF Operations.

- Perform cleaning of the concrete P-trap as follows:
    - Perform preliminary sampling and determination of waste disposition path, in accordance with the Material Profile Characterization guidance and the ICDF Complex Operations Waste Management Plan (WMP).
    - Prepare work area as directed by the RWP.
    - Use a submersible sump pump to transfer most of the liquid fraction (approximately 400-500 gal) above the sediments back into the drain system downstream of the concrete P-trap.
    - Use a rigid wand and a positive displacement "mud pump" to remove sediments to a waste container with absorbent.
    - The appropriate waste tracking documentation in accordance with the Waste Tracking Plan (PLN-914) will be prepared.
    - Following sediment removal, flush pumps and hoses with clean water back into the concrete P-trap.
    - Package equipment and restore work area per RCT directions. Store packaged equipment in the radioactive material storage area of the decon building.
    - Dispose of waste as in accordance with the WMP.
- Remove sediments and debris from the contaminated equipment pad trench as follows:
    - Prepare work area per RWP and RCT direction
    - Remove trench grate sections as needed
    - If needed, dampen sediments with water before removing with hand tools and placing in a waste container
    - Prepare the appropriate waste tracking documentation and sampling of sediments as needed in accordance with the Waste Tracking Plan
    - Replace trench grate sections, package tools, and restore work area per RCT directions
    - Dispose of waste as determined appropriate by WGS in accordance with the WMP.
- Record activities and amounts of sediments removed in the Operating Log.

6. REFERENCES AND INTERFACES

- Drawings 520047, "Decon Building Foundation and Pad Plan" and 520048, "Decon Building Foundation and Pad Plan Sections and Details"
- DOE/ID-10886, *ICDF Complex Operations Waste Management Plan*
- PLN-914, "Waste Tracking Plan."

7. RECORDS

- On-Site Waste Tracking Forms
- IWTS electronic data
- Material Profile records
- Work control data.

Cleaning of the Decon Building Oil/Water Separator

Prepared by	Tracking No.
R. C. Shilkett	1.2.3.2
Date	Revision
October 28, 2002	0

1. PURPOSE

The purpose of this procedure is to address the removal and disposition of accumulated sludge, sediment, and debris or oil from the decon building contaminated drain system.

2. SCOPE AND APPLICABILITY

This procedure applies to the oil/water separator (OT-YDJ-101) located off the east side of the Decon building.

3. REGULATORY REQUIREMENTS

None identified.

4. EQUIPMENT

- Submersible sump pump for removal of liquid phases above the sediments
- Positive displacement “mud pump” for removal of sediments and liquid
- Collection containers for sediments and oil
- Absorbents, if needed
- Miscellaneous hand tools
- An oil/water interface level indicator or semiclear bailer.

5. IMPLEMENTATION

The oil/water separator will always maintain a liquid level of approximately 4 ft 5 in. It will be cleaned when >6 in. (approximately 50 gal) of oil has accumulated on the surface of the water in the separator or >12 in. of material (approximately 10-15 ft^3) has accumulated in the bottom of the separator, or when deemed necessary by ICDF Operations.

- Perform preliminary sampling of phases and determination of waste disposition path in accordance with the ICDF Complex WMP.
- Prepare work area as directed by the RWP.

- For oil removal, use a submersible sump pump with a rigid suction line to transfer as much oil as practical to a waste container. Flush pump with water phase back into the oil/water separator.
- For water phase removal (only if sediment removal is required), use a sump pump to transfer the water to the pump station sump leaving about 6 in. of water over the sediment layer.
- Use a rigid wand and a positive displacement mud pump to remove sediments to a waste container with absorbent.
- Prepare the appropriate waste tracking documentation in accordance with the Waste Tracking Plan (PLN-914).
- Following sediment removal, flush pumps and hoses with clean water back into the oil/water separator.
- Refill the oil/water separator to the normal full level with raw water.
- Package equipment and restore work area per RCT directions. Store packaged equipment in the radioactive material storage area of the decon building.
- Dispose of waste in accordance with the WMP.
- Record activities and amounts of oil or sediments removed in the Operating Log.
- Monitor and record the level of fuel in the oil/water separator using the oil/water surface indicator or a semiclear bailer.

6. REFERENCES AND INTERFACES

- Drawings 520030, "SSSTF Plan Sections and Details"
- DOE/ID-10886, *ICDF Complex Operations Waste Management Plan*
- PLN-914, "Waste Tracking Plan."

7. RECORDS

- On-Site Waste Tracking Forms
- IWTS electronic data
- Material Profile records
- Work control data.

Waste Loading and Transportation

Prepared by	Tracking No.
P. J. Jessmore	4.2
Date	Revision
October 31, 2002	1

1. PURPOSE

The purpose of this procedure is to outline waste loading and transportation requirements for CERCLA waste that is being loaded or transported within the ICDF Complex.

2. SCOPE AND APPLICABILITY

This procedure addresses loading and transportation requirements to be used at the, queue(s), storage area(s), treatment unit, SSA, or any time waste is being loaded or transported within ICDF.

3. REGULATORY REQUIREMENTS

40 CFR 264.171, "If a container holding hazardous waste is not in good condition (e.g., severe rusting, apparent structural defects) or if it begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition or manage the waste in some way that complies with the requirements of this part."

40 CFR 264.173(b), "A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak."

4. EQUIPMENT

- Spill pillows or similar spill materials designed to absorb/contain liquid waste
- Spill equipment necessary to collect soil type waste (e.g., shovel, broom and dustpan)
- Empty waste containers
- Personal protective equipment (e.g., gloves, anti-Cs, steel toed boots, hard hats, etc.)
- Radiation detection instrumentation
- Appropriate container handling equipment, such as a forklift, crane, or drum dolly
- Loading equipment
- Transport vehicle.

5. IMPLEMENTATION

- Prior to loading a container, ensure that the container and container cover are in good condition with no visible tears, cracks, holes, bulges, substantial corrosion, or other damage that could compromise container integrity or allow precipitation to enter the container once in place.

- If a dump truck or roll-on roll-off is used, install the appropriate liner material to prevent a release of hazardous constituents and to prevent contamination of the bed or container.

- Ensure that containers remain closed unless it is necessary to remove or add waste to the container. Containers of waste shall not be opened, handled, or stored in a manner that will cause leakage (40 CFR 264.173(b)).

- Use appropriate slings and lifting devices for packages loaded with a crane. Follow appropriate procedures for the equipment being used.

- If using containers other than roll-on/roll-off boxes, configure containers on transport vehicle for safe unloading by a forklift or crane.

NOTE: *If using roll-on/roll-off boxes, the box will already be placed on the transport vehicle prior to arrival.*

- Ensure that container markings are clearly visible for inspection when placed on transport vehicle.

- Ensure containers are labeled with the labels required by the ICDF Complex WAC.

- Ensure containers holding incompatible wastes are separated by proper means (e.g., flammables are separated from ignitables).

- Invoke appropriate spill control measures when a container has been breached.

- Transfer waste from a leaking container to a container with good integrity (40 CFR 264.171).

- Ensure the OWTF is accurate and located inside the transport vehicle. The OWTF must accompany the load.

- Transport load to the appropriate location and record the location on the OWTF.

6. REFERENCES AND INTERFACES

- PLN-914, "ICDF Complex Waste Tracking System Plan."

7. RECORDS

- OWTF

- Material Profile.

Debris Treatment

Prepared by	Tracking No.
K.K. Packard/R. C. Shilkett	4.3.5
Date	Revision
November 7, 2002	0

1. PURPOSE

The purpose of this procedure is to provide the operating instructions for the ICDF debris treatment process.

2. SCOPE AND APPLICABILITY

Only debris meeting the definition of hazardous or mixed waste debris can be treated by this procedure. Debris is contained in 2- × 2- × 8-ft and 4- × 4- × 8-ft engineered plywood box assemblies.

3. REGULATORY REQUIREMENTS

40 CFR 268.45, Treatment standards for hazardous debris.

4. EQUIPMENT

Debris treatment will be performed in the treatment area or the decon bay of the decon building.

- Portable grout hopper/pump assembly
- Hand power tool for cutting holes in boxes
- Miscellaneous hand tools
- Portland-cement based grout for microencapsulation
- Debris box brace assembly
- Forklift
- Scale for weighing debris boxes pre- and posttreatment.

Grout mixes for the debris treatment process.

	Estimated Batch Weights (per yd^3)	
Material	Mix. No. 1	Mix No. 2
Water	800 lb (96 gal)	433 lb (52 gal)
Cement (Type I/II)	680 lb	320 lb
Fly ash	1,600 lb	640 lb
Pumice sand	—	1,400 lb
High-range water reducer	Approx. 6 lb	Approx. 8 lb

5. IMPLEMENTATION

The following steps will be implemented to treat a container of hazardous or mixed waste debris:

- Verify that total weight of each debris box and its contents are recorded on OWTF. Obtain weight and record if unknown.
- Have debris box surveyed and cleared for treatment by radiological control technician.
- Prior to the delivery of cement grout, the containers to be treated will be staged in the immediate vicinity where treatment will take place. Position the hopper/pump assembly and a debris box brace in the location treatment will occur. Position and secure the first box to be treated in the box brace.
- Cut two holes on top of box on opposite ends, being sure holes penetrate any container liner material. Holes may be enlarged to access and cut through liner.
- Visually inspect debris contents exposed in access holes to verify debris is as stated on profile.
- Inspect grout to verify consistency using operator judgment. The grout should have a flowable consistency without exhibiting excess water. Reject grout if it does not meet these criteria.
- Insert discharge hose nozzle in one of the holes, being sure the nozzle extends below liner.
- Check that the speed setting on the pump is positioned on the “slow” setting.
- Turn on pump.
- Strike the container sides with rubber mallet or use vibrator on outside of box (attached to box brace) while filling to aid grout flow through void spaces in debris.
- Monitor flow of grout into container. Adjust pump speed as necessary. Slow pump speed down as the grout nears the surface of the box.
- Turn pump off when grout is within 4-6 in. of the bottom of holes.
- If amount of grout added to box is determined to be less than expected (operator judgment), cut additional hole(s) in box and verify that grout is evenly distributed. Add more grout where needed.
- Allow grouted debris to set overnight. Note: After grouted debris has set, top-off debris box with second layer of grout being sure not to overfill (use a plastic vent sleeve(s) on the hole(s) opposite the grout nozzle as a safeguard to contain any excess grout).
- After final grouting, remove box from brace and place box in storage for later placement into landfill when weather and scheduling permit disposal.
- Weigh box and determine total amount of grout added to box. Record weight on OWTF.
- Re-position hopper/pump assembly to treat next debris box and repeat above steps.

- When treatment is complete, thoroughly clean hopper/pump assembly. Discharge residual grout from hopper/pump into containers. After suspended matter in rinse water has settled, decant water off into decon bay drain trench.

6. REFERENCES AND INTERFACES

- EDF-1730, “Staging, Storage, Sizing, and Treatment Facility, Debris Treatment Process Selection and Design”
- EDF-2693, “Staging, Storage, Sizing, and Treatment Facility, Waste Box Grouting Frame.”

7. RECORDS

- Material Profile sheets
- Integrated waste tracking system electronic records
- Operations log entries
- Work control forms.

Tank Management Requirements

Prepared by	Tracking No.
P. J. Jessmore	4.3.7
Date	Revision
October 31, 2002	1

1. PURPOSE

The purpose of this procedure is to address ICDF tank management requirements, to ensure the following:

- That incompatible waste is not placed in the tank system
- Leaks or spills and the tank system from which they originated, are handled appropriately
- Response actions are performed when problems are identified
- Inspection requirements for tanks are met.

2. SCOPE AND APPLICABILITY

As defined, tank/tank systems include ICDF Complex sumps, oil/water separators and tanks located in storage areas (i.e., aboveground poly tanks in the SSA and/or ICDF tank storage area). This procedure addresses tank systems within the confines of the ICDF Complex (i.e., aboveground poly tanks in the SSA and/or ICDF tank and container storage area, the combined sump, and the tank system composed of the concrete P-trap, oil/water separator, and the pump station). This procedure is separated into general operating requirements, spill/leak requirements, and inspection requirements.

3. REGULATORY REQUIREMENTS

- 40 CFR 262.34, Accumulation Time.

4. EQUIPMENT

- Level transducers and alarms
- Spill pillows or similar spill materials designed to absorb/contain liquid waste
- Empty waste containers for spill clean-up
- Personal protective equipment (e.g., gloves, anti-Cs, steel toed boots, hard hats)
- Radiation detection instrumentation.

5. IMPLEMENTATION

General Operating Requirements

- Evaluate the tank system and the characteristics of the waste to ensure compatibility.
- Perform an evaluation to ensure that incompatible wastes are not placed in the same tank.
- Ensure that waste is not placed in an unwashed tank that previously held an incompatible waste.
- Inspect daily for tank integrity.

Spill/Leak Requirements

- Immediately remove from service a tank system from which there has been a leak or spill. Notify ICDF Management.
- Align valves, as appropriate, to prevent flow of additional waste into the tank.
- Isolate tank from other containers within the area to prevent cross contamination.
- Remove waste from tank system and/or secondary containment system unless it can be demonstrated that this is not possible.
- Inspect the system to determine the cause of the release.
- Perform a visual inspection and contain all releases to the environment.
- Remove and properly dispose of any visible contamination to the environment.
- Prepare appropriate notifications, and reports.
- Notify the Agencies for leaks or spills *other than* the following:
    - If the spill/leak is less than or equal to the reportable quantity for the specific compound, and
    - If the spill/leak is immediately contained and cleaned up.
- If a spill/leak has been released to the environment, prepare and submit a report to the Agencies that describes the leak, the volume of the release, and the response actions performed.
- Repair or close tank/tank system.

For extensive repairs (e.g., installation of an internal liner, repair of a ruptured primary containment or secondary containment vessel):

- Obtain a certification from an independent, qualified, registered, professional engineer prior to returning the tank to service.
- Return the tank to service.

Inspections

- Develop and follow an inspection schedule for those systems that do not have a leak detection system. Inspect aboveground portions of tank systems on a daily basis. Tank systems with alarm functions will be verified to ensure alarms are functioning through verification of not having a "loss of signal" alarm indicated by the PLC.

- Perform an inspection each day of the following:

  - Aboveground portions of the tank system, if any, to detect corrosion or releases of waste.

  - Overfill control equipment (i.e., level alarms) to ensure they are functioning, through verification of not having a "loss of signal" alarm indicated by the PLC.

  - Review data gathered from monitoring and leak detection equipment to determine if a leak has occurred.

  - The construction materials and the area immediately surrounding the externally accessible portions of the tank system including the secondary containment system to evaluate structural integrity, inspect for erosion, corrosion, or signs of releases from the tank.

  - Waste levels. Ensure waste in primary aboveground tank is below the top of the secondary containment.

  - Labeling. Ensure tanks located in storage areas are properly labeled (i.e., "empty," "potable water," or "CERCLA Waste").

- Perform an annual inspection of cathodic protection systems if present, to ensure that they are functioning properly.

- Perform an inspection or test as appropriate, all sources of impressed current.

- Note all deficiencies/problems resulting from inspections, and notify the appropriate ICDF facility manager.

- Sign and date the inspection document as part of the operating record of the facility and submit to ICDF Document Control.

- Track and record response actions to correct problems for previously identified deficiencies.

- The responsible individual for submitting work requests resulting from the inspection will be determined by the facility manager or supervisor.

- The distribution of the inspection report will be determined by the ICDF facility manager.

6. REFERENCES AND INTERFACES

None.

7. RECORDS

- PE Certification of Repairs
- Tank inspections and reports
- Response action work orders.

Waste Shuttle Requirements

Prepared by	Tracking No.
R.G. Hanson	4.3.8
Date	Revision
05/13/02	0

1. PURPOSE

The purpose of this procedure is to address the movement of waste from the ICDF staging area or the scale to the landfill dump face or the evaporation pond, as appropriate.

2. SCOPE AND APPLICABILITY

The scope of this procedure is the routine daily movement of waste from the staging or receiving area at the ICDF to the dump face or the evaporation pond. This procedure applies to bulk soils and debris waste that are dumped at the work face, as well as the containerized waste, PCB waste, asbestos, monoliths, and aqueous waste.

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- Roll-on/roll-off trucks that can pick up waste-filled containers at the staging area and deliver and off-load at the dump face and return the empty container to the staging area
- Dump trucks for dig sites that choose to use them
- Tractor capable of delivering a flatbed trailer loaded with either containers or monoliths to the dump face
- Portable crane, forklift, or front-end loader for off-loading of monoliths and containers from flatbed trucks
- Tanker truck for aqueous waste
- Water truck to dispense water to the haul road and the dumping peninsula at the beginning of operations each day and as needed throughout the day to control dust.

5. IMPLEMENTATION

- The appropriate truck (dependant on the waste form of staged waste) will proceed to the staging area and load the waste containers for delivery to the disposal cell.
- Prior to loading the waste container, the driver will examine the container and the area around the container for evidence of leakage or any other concerns.

- WGS or the driver (if WGS is not present) will verify the bar code on the container matches the OWTF and determine if special considerations exist for waste shipment.

- The driver then proceeds to the disposal cell and backs into position as directed by the off-loading coordinator at the dump face. If the waste is aqueous, the truck proceeds to the off-loading station at the evaporation pond.

- The shipping papers for the load are reviewed by the off-loading coordinator. If all is in order, the container is prepared for off-loading.

- Once the truck has been off-loaded, a survey for radiological contamination is performed around the rear container gate, the rear tires, and the rear of the truck frame. If background is high, the truck will be moved to a lower background area where a radiological survey can be performed. If clean, the truck is cleared to take the empty container back to the staging area and off-load. If contamination is detected, the truck will be decontaminated in the disposal cell area or the decon building.

- The OWTFs are collected by the off-load coordinator and are given to the appropriate data entry person at the end of the shift for entry into the data tracking system. The location data must be entered into the Waste Tracking System before the end of the next operating day.

- The driver then proceeds to the full container section of the staging area and begins the process over or leaves the ICDF to return to the remediation site.

6. REFERENCES AND INTERFACES

- PLN-914, "ICDF Complex Waste Tracking System Plan."

7. RECORDS

- The OWTF will be entered into the electronic record of waste disposal data.

- The hard copy of the shipping papers will be filed in the admin trailer.

Tank Off-Loading at the Evaporation Ponds

Prepared by	Tracking No.
R. C. Shilkett	4.6.1
Date	Revision
November 18, 2002	0

1 PURPOSE

Transfer of liquid waste from various container configurations to the evaporation pond cells via the CPP-2706 truck unloading station and CPP-1798 crest pad building.

2. SCOPE AND APPLICABILITY

This procedure will apply to any container unloading activities at CPP-2706.

3. REGULATORY REQUIREMENTS

None identified.

4. EQUIPMENT

- Flexible hoses, fittings, and valves as required to unload various containers
- Transfer pump and suction line
- In-line filter, 30-micron pore size.

5. IMPLEMENTATION

The unloading facility is designed to accommodate a variety of containers. Regardless of container size, there will two primary methods for unloading–gravity flow or pumping. A 30-micron in-line filter will be available should it be required for ICDF-generated wastes.

- Gravity flow unloading
  - Verify that the Combined Sump SU-CD-107 pump is in automatic operating mode.
  - Record the initial flow totalizer for FT-CD-207.
  - Don appropriate PPE.
  - Attach the flexible hose from the tank to the CPP-2706 collection sump.
  - Open the discharge valve on the tank to the sump. For a tank greater than 400-gal capacity, the operator must control the flow to not exceed the capacity of the CPP-2706 sump or pump P-CD-207.

- When the tank is empty, close the discharge valve and rinse the hose into the sump with raw water.
- Doff PPE.
- Observe pump P-CD-207 operation. Record the final flow total from FT-CD-207.
- Record the gallons delivered on the OWTF and in the Operating Log.

- Discharge pump unloading
  - Verify that the valve alignment in CPP-1798 is correct for pump discharge.
  - Record the initial flow totalizer reading for FT-CD-327.
  - Don appropriate PPE.
  - Establish a connection from the tank to valve SWV-CD-48 via the unloading pump.
  - Open valve SWV-CD-48.
  - Start the unloading pump and run until the tank is empty.
  - Stop the pump and close valve SWV-CD-48.
  - Remove the pump or suction tube from the tank and let it drain into the CPP-2706 sump. Rinse the hose and pump (if needed) into the sump.
  - Disconnect the hose from SWV-CD-48 and rinse the hose into the CPP-2706 sump.
  - Doff PPE.
  - Record the final flow totalizer reading on FT-CD-327.
  - Record the gallons delivered on the OWTF and in the Operating Log.
- RCT surveys the tank and truck for free release from the facility.
- The CPP-2706 sump area is also surveyed to confirm that there is no radiological contamination in uncontrolled areas.

6. REFERENCES AND INTERFACES

- Drawing IN-202, “Evaporation Ponds P&ID”
- Drawing P-203, “Evaporation Ponds Leak Detection/Leachate Collection Systems Plan.”

7. RECORDS

- IWTS electronic records.
- Record the volumes of waste and OWTF numbers in the Operating Log.

Aqueous Waste Transfer From Decon/Treatment Building

Prepared by	Tracking No.
R. C. Shilkett	4.6.2
Date	Revision
November 2, 2002	1

1 PURPOSE

This procedure addresses the transfer of aqueous liquid wastes generated at the SSSTF decon building to the ICDF evaporation ponds via the evaporation pond crest pad building.

2. SCOPE AND APPLICABILITY

This procedure includes aqueous wastes from the decon building generated by the following processes:

- Soil stabilization processing and equipment cleaning
- Debris treatment processing and equipment cleaning
- Equipment decontamination and cleaning
- Development water with total suspended solids that cannot be discharged directly into the evaporation ponds.

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- Aqueous wastes, regardless of source in the decontamination building, will pass through an oil/water separator (OT-YDJ-101) and be collected in the decon building pump station sump (MAH-YDJ-SW-498).
- Two 2-hp “grinder” wastewater pumps (P-YDJ-203 and P-YDJ-204) will be located in the pump station sump.
- The pumps will be controlled by the ICDF I&C system and an ultrasonic monitor located in the sump.
- Any leaks in the carrier line to the CPP-1798 evaporation pond crest pad building will be detected and collected at the double containment leachate pipe sump (MAH-CD-499).
- Liquid waste flow data will be measured by FT-CD-330 in CPP-1798. The flow rate and total flow may be observed in the crest pad building and the admin trailer (CPP-1689).
- A sample port is located off valve SWV-CD-56 in CPP-1798.

- There will be an alarm function for high and low sump levels in pump station sump and leak detection in sump. These alarms will display in the admin trailer. A single "ICDF trouble" alarm will also be displayed in a control room at INTEC that is continually staffed.

5. IMPLEMENTATION

- There are four sources of waste water from the Decon building: wash down water from the treatment area, decon water from the decon bay, run-off water from the contaminated equipment storage pad, and purge/development water discharged at the decon building due to high total suspended solids.

- The liquid waste transfer system is designed to operate in an automatic mode. Manual operation of the two sump pumps is available from the admin trailer.

- Set points for operation are shown in Table 5-1.

Table 5-1. Pump Station Sump Operations Set points.

Depth	Set Point Function
0 ft.	Bottom of Sump
0.5	Low-Level Alarm
1.0	Both pumps OFF
4.5	First pump ON
4.8	Second Pump starts, both pumps ON
5.0	High-Level Alarm

- Valve alignment will be established from transfer of waste to one of the cells of the evaporation pond. The only valve alignment changes that will be required will be to change the initial configuration (using valves SWV-CD-54 and SWV-CD-58 in the evaporation pond crest pad building) to select either the east or west evaporation cell for waste destination.

- A sample port is available off of SWV-CD-56. Manual operation of one of the pumps may be required to obtain a waste sample.

- The I&C system will be programmed to archive the pump station sump levels and the amount of wastewater pumped on a routine basis.

6. REFERENCES AND INTERFACES

- Drawing 520031, "INTEC SSSTF (Pump Station) Details and Sections"

- Drawing IN-202, "ICDF Evaporation Ponds P&ID"

- Drawing P-207, "ICDF Leak Detection/Leachate Collection Sections and Details."

7. RECORDS

- Weekly pump station sump levels and volumes pumped.

Liquid Transfers between Evaporation Pond Cells

Prepared by	Tracking No.
R. C. Shilkett	4.6.3
Date	Revision
May 8, 2002	0

1. PURPOSE

The purpose of this procedure is to describe how to transfer part of, or the entire, contents of one evaporation pond cell to the other to support ICDF operations or maintenance requirements.

- Transfer of liquids from one evaporation pond cell to the other for purposes such as:
  - Leaking of an evaporation pond liner
  - Routine maintenance of the cell liner
  - Solids removal
  - Balancing the level in the cells or consolidating volume in one cell
  - Reducing the risk of wave overtopping
  - Emptying a cell for liner inspection/repair.

2. SCOPE AND APPLICABILITY

This procedure will be applicable whenever liquid from one cell is transferred to the other cell.

3. REGULATORY REQUIREMENTS

40 CFR 264.221(g), "A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave actions; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error."

4. EQUIPMENT

- High-volume leachate pump (~100-gpm), flexible hose, and power cable. Pump operation is manual start/stop.
- Apparatus for installing the high-volume pump in the cell to be pumped. This will require the use of a truck-mounted crane or similar equipment.
- There is no flow or level instrumentation associated with this process.

5. IMPLEMENTATION

- Truck unloading at the evaporation ponds can be performed while liquid is being transferred between cells.
- Other automatic leachate transfers will not impact, or be impacted by, the cell transfer process.
- Ensure that the valve (SWV-CD-54 or SWV-CD-58) to the cell that will receive the liquid is open and the valve to the cell that will be pumped is closed.
- Open the valve on the discharge line of the cell to be pumped and start the pump. Note the time that the pump was started.
- When the desired amount of liquid has been transferred from the cell, stop the pump, close the discharge valve, and note the time the pump was stopped.
- Depending on the operating scenario, the pump may be left in place or removed.
- Return the system to normal automatic operation by ensuring that valve SWV-CD-54 or SWV-CD-58, the valve to the cell that was pumped, is closed.
- Package and store the pump and flexible hose as directed by the RCT in the evaporation pond crest pad building with appropriate secondary containment.
- Calculate the volume of liquid transferred by multiplying the number of minutes the pump operated by pump rate, or by calculating the change in cell volume.
- Record in the Daily Operating Log the approximate volume of liquid transferred from one cell to the other cell of the evaporation pond.

6. REFERENCES AND INTERFACES

- Drawing IN-202, “Evaporation Ponds P&ID.”

7. RECORDS

- Maintain a record of the reason for the transfer, volume of liquids transferred, date and time of the transfer and the beginning and final volumes of both cells.

Evaporation Pond Cell Wash Down

Prepared by	Tracking No.
R. C. Shilkett	4.6.4
Date	Revision
June 3, 2002	0

1. PURPOSE

The purpose of this procedure is to prevent the airborne release of contaminants from the evaporation pond cell liner by washing down any sediment on the exposed portions of the liner on a regular basis as determined by evaporation rates. This procedure may also be implemented to maintain evaporation pond cell levels during times of high evaporation rates.

2. SCOPE AND APPLICABILITY

This procedure applies to the evaporation pond cells during the time period of the year that allows water to be utilized.

3. REGULATORY REQUIREMENTS

40 CFR 61.92, "Emissions from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/yr."

IDAPA 58.01.01.650, "The purpose of Sections 650 through 651 is to require that all reasonable precautions be taken to prevent the generation of fugitive dust."

IDAPA 58.01.01.651.02, "Application, where practical, of asphalt oil, water or suitable chemicals to, or covering of dirt roads, material stockpiles, and other surfaces which can create dust."

4. EQUIPMENT

- Temporary piping, hoses, nozzles, and sprinklers may be utilized. The primary raw water source will be valve RWV-CD-2. If additional water is needed, valve RWV-CD-5 may also be used.
- A water truck with a remote-controlled nozzle may also be used.
- The volume of water used from valves RWV-CD-2 and/or RWV-CD-5 will be measured by FT-CD-210.

5. IMPLEMENTATION

The wash down technique, and amount of water used, will vary depending upon evaporation rates and the amount of aqueous waste being introduced to the cells.

- Raw water valve RWV-CD-2 is located at the extreme south end between the evaporation pond cells. Temporary surface piping from RWV-CD-2, with adequate hose bibs, will be laid around the perimeter of the cells to allow easy hose access to all liner surfaces.

- As needed, exposed areas of the cell liners will be sprayed to wash any evaporation sediment to a flooded portion of the cell (toward the sump area). A water truck operating from the perimeter (exterior) roads of the evaporation pond cells may be used to supplement the hose bib water [40 CFR 61.92].

- Based upon climatic conditions, the system also will be used to maintain a minimum liquid level in each cell using the same wash down technique.

- The volume of water added to the cells will be displayed on flow meter/totalizer FT-CD-210 that can be read at the admin trailer or the evaporation ponds crest pad building. The amount of water added daily will be recorded in the Operating Log.

6. REFERENCES AND INTERFACES

- Drawing P-201, "Leachate Piping Plan"

- Drawings IN-202, "Evaporation Ponds P&ID"

- EDF-2236, "NESHAP Compliance Demonstration for the ICDF Complex."

7. RECORDS

- Record the amount of wash down/makeup water used daily in the Operating Log.

Cleaning of the Evaporation Pond Low-Point Sumps

Prepared by	Tracking No.
R. C. Shilkett	4.6.5
Date	Revision
October 28, 2002	0

1. PURPOSE

The purpose of this procedure is to address the removal and disposition of accumulated sludge, sediment, and debris from the ICDF evaporation ponds.

2. SCOPE AND APPLICABILITY

This procedure applies to both ICDF evaporation ponds.

3. REGULATORY REQUIREMENTS

None identified.

4. EQUIPMENT

- Submersible sump pump for transfer of liquid above the sediments
- Positive displacement pump for removal of sediments and liquid
- Collection containers for sediments and liquids
- Crane for handling waste containers
- Absorbents, if needed, as specified by the WGS technical specialist
- Miscellaneous hand tools.

5. IMPLEMENTATION

The evaporation pond low-point sumps will be cleaned as needed to maintain pond dead space storage volume and optimize the use of make-up water to keep sediments covered with water. As a general guidance, the ponds will be cleaned when approximately 12 in. of material (10–15 yd^3) have accumulated in the 20- × 20-ft low-point area to minimize the amount of sediment that is handled at one time. A combination of operating knowledge and visual operation will be used to determine the approximately 12-in. depth. However, the ponds are capable of storing a significantly greater volume of sediments in the dead space storage area which provides operational flexibility on when the ponds must be cleaned out. (Note that each pond has about 500,000 gal of dead space storage, with an estimated worst-case storage requirement of 300,000 gal.)

- Perform preliminary sediment sampling and determination of waste disposition path per direction of and the Material Profile Guidance and the ICDF Complex WMP.

- Transfer pond inventory, as needed, to the other evaporation pond to facilitate sediment removal utilizing the procedure for liquid transfers between evaporation pond cells.

- Prepare work area as directed by the RWP and SWP.

  - Samples must be collected from the sludge to ensure LDR compliance.

- Remove sediments and place in waste containers by one of the following methods:

  - The sediments may be pumped as a slurry and dewatered prior to placement in waste containers. The excess water would be cycled back into the pond cell being cleaned to slurry more sediment or be placed in the other evaporation pond cell.

  - Sediments may be removed manually and placed in waste containers with absorbent.

- WGS will prepare the appropriate waste tracking documentation in accordance with the Waste Tracking Plan (PLN-914).

- Package equipment and restore work area per RCT directions. Store packaged equipment in the radioactive material storage area of the decon building.

- Dispose of waste as determined appropriate by WGS in accordance with the WMP.

- Record activities and amounts of sediments removed in the Operating Log.

6. REFERENCES AND INTERFACES

- Drawing C-203, "Evaporation Pond Area Final Grading Plan," and P-203, "Evaporation Pond Leak Detection/Leachate Collection System Plans"

- DOE/ID-10886, *ICDF Complex Operations Waste Management Plan*

- PLN-914, "Waste Tracking Plan."

7. RECORDS

- OWTFs

- IWTS electronic data

- Material Profile records

- Work control data.

Evaporation Pond Cell Liquid Level Monitoring

Prepared by	Tracking No.
R. C. Shilkett	4.6.6
Date	Revision
November 2, 2002	1

1. PURPOSE

The purpose of this procedure is to describe how to track, on a regular basis, the inventory of each evaporation pond cell. This information will be used to monitor the performance of the cells. This information also will be utilized to manage cell inventories to meet freeboard requirements.

2. SCOPE AND APPLICABILITY

This procedure applies to the evaporation pond cells throughout the year.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.221(g), "A surface impoundment must be designed, constructed, maintained, and operated to prevent overtopping resulting from normal or abnormal operations; overfilling; wind and wave action; rainfall, run-on; malfunctions of level controllers, alarms, and other equipment; and human error."

4. EQUIPMENT

Depth marker staff will be placed in the cells to allow visual observation of cell levels.

5. IMPLEMENTATION

Following the completion of cell construction, a depth marker staff will be placed in each cell. The as-built drawings will be used to calculate the cell volume that corresponds to particular depths.

- On a regular basis, observe and record the level in each cell [40 CFR 264.221(g)].

- Compare any change in level from the previous reading to the amount of leachate and/or other liquid wastes introduced to the cell (pump station, truck loading/unloading station), makeup/wash down water added, rainfall amount, liquid transfers between cells, leak detection chamber liquid pumped into the cell, and the expected evaporation rate for the time period.

- Provide the comparison information (pond level must be more than 2 ft of freeboard) to ICDF Operations management to determine if any response actions are required. Response actions may include addition of makeup water, transfer of inventory from one cell to another or a tank, or further investigations to determine if a cell might be leaking.

6. REFERENCES AND INTERFACES

- Overview 4.6.2, “Aqueous Waste From Decon/Treatment Building”
- Overview 4.6.3, “Liquid Transfers Between Evaporation Pond Cells”
- Overview 4.6.4, “Evaporation Pond Cell Wash Down”
- Overview 4.6.7, “Evaporation Pond Leak Detection Chamber Monitoring and Liquid Transfers”
- Overview 4.8.1, “ICDF Landfill Leachate Monitoring and Transfer to the ICDF Evaporation Pond”
- Overview 4.12.8, “Liquid Transfers from an Evaporation Pond to a Tank.”

7. RECORDS

- Record the Evaporation Pond cell levels in the Operating Log
- Record make-up water additions.

Evaporation Pond Leak Detection Chamber Monitoring and Liquid Transfer

Prepared by	Tracking No.
R. C. Shilkett	4.6.7
Date	Revision
May 8, 2002	0

1. PURPOSE

The purpose of this procedure is to describe how to monitor leakage through the sacrificial geomembrane, primary geomembrane and geosynthetic clay liners of the evaporation pond cells. Implement appropriate actions if the ALR has been exceeded. Specifically, the following will be addressed:

- Monitor the two leak detection chambers of the evaporation ponds and remove measurable amounts of liquid as necessary.
- Monitor, record, and archive liquid levels in the leak detection chambers and the volumes transferred from each chamber to the evaporation pond at least once each week.
- Convert the volume removed from each leak detection sump to an average daily leakage rate and compare that to the ALR. The ALR for an evaporation pond is calculated to be 1,590 gallons per day (EDF-ER-280, "Landfill Leachate Collection System Design Analysis").
- Implement the Evaporation Pond Action Leakage Rate Response Plan (4.12.7) if the ALR has been exceeded.

2. SCOPE AND APPLICABILITY

This procedure applies to the leak detection sumps of both evaporation pond cells.

3. REGULATORY REQUIREMENTS

40 CFR 264.221(c)(3) "An owner or operator (of a surface impoundment) shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner."

4. EQUIPMENT

- Level transducers are mounted in the case of the low-volume (10-gpm) pumps in the west evaporation pond leak detection chamber (SU-CD-101) and east evaporation pond leak detection chamber (SU-CD-102). There are alarm functions for high and high-high chamber levels. The alarms will display locally and at the control panel in the admin trailer. A single "ICDF trouble" alarm will also be displayed in a control room at INTEC that is continually staffed. Set points will be established during system operational testing.
- The evaporation pond crest pad building has a separate sump (SU-CD-106) to collect any leaks from connecting piping or fittings that drains to the combined sump (SU-CD-107). The combined

sump has a pump with level switches for start and stop and an alarm for high-high sump level that displays locally and at the admin trailer. This alarm also feeds the "ICDF trouble" alarm at INTEC.

- Pump cycling is automatic. Starting and stopping also can be controlled as a manual operation. Each discharge line has a flow meter/totalizer with a display at the crest pad building control panel in the admin trailer.

- The liquid removed from either chamber can be sampled at the sample port off of valve SWV-CD-56.

5. IMPLEMENTATION

- The leak detection chamber transfer system for each sump is designed to operate in an automatic mode. Manual operation of both pumps is available by a hand switch. For "hand" operation, document flow meter/totalizer readings and any hand calculations.

- Valve alignment will not differ with the exception of valves SWV-CD-54 and SWV-CD-58 that are used to select either the west or east evaporation pond as the pump discharge destination.

- A sample port is installed off of valve SWV-CD-56 in the evaporation pond crest pad building. Manual operation of a pump may be required to obtain a sample.

- The instrumentation and control system will be programmed to archive the leak detection chamber level and volume of liquid pumped from each chamber on a weekly basis.

- Each discharge line has a flow meter/totalizer with display at the local control panel and the administration trailer.

- Chamber levels and liquid volumes transferred will also be recorded in the facility Operating Log.

- Convert the weekly volume removed from each leak detection chamber to an average daily leakage rate and compare that to the calculated action leakage rate. Implement the Evaporation Pond Action Leakage Rate Response Plan (4.12.7) if the ALR has been exceeded.

6. REFERENCES AND INTERFACES

- Drawing IN-202, "Evaporation Ponds P&ID"

- Overview 4.12.7, "Evaporation Pond Action Leakage Rate Response Plan"

- EDF-ER-280, "Landfill Leachate Collection System Design Analysis."

7. RECORDS

- Weekly sump volumes

- Weekly volumes removed from each sump

- Conversion of the weekly removal volume to a daily leakage rate and comparison with the ALR.

ICDF Landfill Leachate Monitoring and Transfer to the ICDF Evaporation Pond

Prepared by	Tracking No.
R. C. Shilkett	4.8.1
Date	Revision
November 2, 2002	1

1. PURPOSE

This procedure will provide instructions for handling and monitoring landfill leachate and the documentation of this operating data. Specifically, this procedure will ensure that the following elements are implemented:

- Ensure that the hydraulic head over the primary liner of the landfill does not exceed 30 cm (1 ft) by automatically transferring the leachate from the leachate sump.
- Ensure the sumps are monitored at least once each week during the active life and closure period and that this information is recorded and archived.
- Ensure that the leachate volumes are assessed at least once each week during the active life and closure period and that this information is recorded and archived.
- Calculate the daily leakage rate from the LDRS and compare the daily leakage rate and weekly leak detection sump volumes to the ALR limits for the landfill. (Immediately notify the facility manger and implement the Landfill Action Leakage Rate Response Plan (4.12.6) if the ALR has been exceeded). The calculated ALR for the LDRS is 1,380 gal per day.
- Ensure that monitoring, measuring, recording, and archiving of the leachate levels in the sumps and the volumes transferred from the leachate sump occurs. This is performed at least once each month after the final cover is installed.

2. SCOPE AND APPLICABILITY

This procedure will apply to leachate transfers between the landfill sumps and the evaporation pond cells. It also addresses the requirement for calculating the average daily flow rate, comparison of this calculated average flow rate to the ALR, and identifies the records required for these activities.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.301(c)(2) "…ensure that the leachate depth over the (landfill) liner does not exceed 30 cm (one foot)."
- 40 CFR 264.301(c)(3)(v) "…each removal system must provide a method for measuring and recording the volume of liquids present in the sump and of liquids removed."
- 40 CFR 264.302(a) "…The action leakage rate is the maximum design flow rate that the leak detection system (LDS) can remove without the fluid head exceeding 1 foot…"

- 40 CFR 264.302(b) "To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under §264.303(c) to an average daily flow rate (gallons per acre per day) for each sump. Unless the Regional Administrator approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period, and monthly during the post closure care period…."

4. EQUIPMENT

- Level transducers are mounted inside the case of the low-volume pumps in the leachate collection/recovery (SU-CD-103), leak detection (SU-CD-104), and secondary leak detection (SU-CD-108) sumps.

- Each sump will have a low-volume (10-gpm) pump. The leachate collection/recovery sump will also have a high-volume (100-gpm) pump.

- Each discharge line has a flow meter/totalizer with display at the control panel in the admin trailer.

- There are alarm functions for a high-high sump levels and a failure to start for each pump. The alarms will display locally and at the control panel in the admin trailer. A single "ICDF trouble" alarm will also be displayed in a control room at INTEC that is continually staffed.

- The landfill crest pad building has a separate sump (SU-CD-105) to collect any leaks from connecting piping or fittings with a small pump that discharges to the leachate collection/recovery sump. This pump has level switches for start and stop and an alarm for high-high sump level that displays locally and at the admin trailer. This alarm also feeds the "ICDF trouble" alarm at INTEC.

5. IMPLEMENTATION

- The leachate transfer system for each sump is designed to operate in an automatic mode. Manual operation of all pumps is available by a hand switch.

- Valve alignment will be established for transfer to one of the cells of the evaporation pond. The only valve alignment changes that will be required will be to change the initial configuration (using valves SWV-CD-54 and SWV-CD-58) to select either the east or west evaporation cell for leachate destination.

- Sampling ports are installed on all leachate discharge lines in the landfill crest pad building. Manual operation of a pump would be required to obtain a leachate sample.

- The instrumentation and control system will be programmed to archive the sump level and volume of leachate pumped from each sump on a weekly basis.

- Sump levels and leachate volumes will also be recorded weekly in the Facility Operating Log.

- Calculate the weekly flow rate for the leak detection sumps to an average daily flow rate in gallons/acre/day and also record this value in the facility Operating Log.

- Compare the daily leak detection flow rate to the calculated action leakage rate. If the daily rate is equal or greater than the action leakage rate, then refer to Landfill Action Leakage Rate Response Plan (4.12.6).

6. REFERENCES AND INTERFACES

- Drawing IN-201, “Landfill P&ID”
- Drawing IN-202, “Evaporation Ponds P&ID”
- Overview 4.12.6, “Landfill Action Leakage Rate Response Plan”
- EDF-ER-269, “Leachate Generation Study.”

7. RECORDS

- Weekly leachate sump levels and leachate volumes pumped
- Action leakage rate calculations and comparisons.

Haul Road Management

Prepared by	Tracking No.
R.G. Hanson	4.9.1
Date	Revision
June 4, 2002	0

1. PURPOSE

This procedure addresses the management of the haul roads that lead from the queuing area to the dump face in the landfill. Included are the modification of haul roads as the dump face moves in the landfill as well as routine management of the haul roads.

2. SCOPE AND APPLICABILITY

This procedure will provide direction for

- Extension or movement of haul roads as a result of movement of the dump face peninsula
- Routine grading of the haul roads
- Radiological survey of the haul road to identify the presence of waste spills
- Maintenance of signage to control traffic on the haul roads
- Dust control.

3. REGULATORY REQUIREMENTS

- IDAPA 58.01.01.650 – Idaho Fugitive Dust Emissions
- IDAPA 58.01.01.651 – Idaho Fugitive Dust Emissions
- IDAPA 58.01.01.585 – Rules for Control of Air Pollution in Idaho
- IDAPA 58.01.01.586 – Rules for control of Air Pollution in Idaho
- 40 CFR 61.92, "Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year."

4. EQUIPMENT

The following equipment will be required to provide for the necessary management of the haul road:

- A truck will be needed to transport clean fill to the haul road modification location.

- A loader will be needed to load the clean fill into the truck.
- A grader will be required to spread the clean fill and road base for haul road modification. The grader also will be used routinely to keep the haul road surface smooth.
- A compactor will be required to compact the road base and clean fill.
- A water truck will be required to maintain dust control while landfill operations are ongoing, as necessary.

5. IMPLEMENTATION

- The design of the ICDF Complex calls for waste to be transported from the queuing area to the landfill dumping peninsula by means of a clean haul road. As the dump face moves from the initial location in the southwest corner of the landfill toward the north face, the haul road will be extended to access the new dump peninsula. The extended haul road and new peninsula consist of approximately 18 in. of clean compacted granular fill from the permanent stockpile for the Complex. The material will be placed in 6-in. compact lifts. If the material in the permanent stockpile is not suitable for roads, material will be imported. The haul road will be maintained with a width of 30 ft and a maximum slope of 10%. The haul road will be graded and maintained during landfill operations as required.
- As new lifts are established and dump peninsulas are developed on the new lift, access to the new lift will be gained by extension of the haul road system to the new peninsula. Traffic control signage will be posted on all haul roads. Signage will be self-standing.
- A water truck will be used as needed to apply water to the haul roads to control dust. Spills that are identified on the haul roads will be evaluated by the RCT and appropriate cleanup of the spill material and area will be accomplished with direction from the RCT and through implementation of the INTEC Spill Response Plan (Appendix G to PLN-114-2).

6. REFERENCES AND INTERFACES

- EDF-ER-286, “Waste Placement Plan”
- PLN-114-2, Appendix G, “INTEC Spill Response Plan”
- EDF-2236, “NESHAP Compliance Demonstration for the ICDF Complex.”

7. RECORDS

- Completed weekly inspection reports.

Dust/Contamination Control Requirements

Prepared by	Tracking No.
R.G. Hanson	4.9.3
Date	Revision
October 31, 2002	1

1. PURPOSE

The purpose of this procedure is to address the ICDF requirements for dust/contamination control.

2. SCOPE AND APPLICABILITY

This procedure addresses the ICDF operational requirements to provide and maintain a system to control airborne dust and contaminates from the landfill and active areas during operations and during off-hours through the use of a variety of control mechanisms.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.301(j): "If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal."
- IDAPA 58.01.01.585 – Rules for Control of Air Pollution in Idaho
- IDAPA 58.01.01.586 – Rules for Control of Air Pollution in Idaho
- 40 CFR 61.92, "Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year."

4. EQUIPMENT

- Water truck to apply water to control dust emissions on access roads, dump peninsula, and the operations layer subject to operational use
- Water truck or temporary water line to the active dump face with flexible hose and nozzle
- Environmentally accepted dust suppressant and application equipment (i.e., New Waste Concepts: ProGuard SB and ConCover SW, Landfill Service Corp.; Posi-shell, Standard Tack and Mulch Technology; or equivalent).

5. IMPLEMENTATION

- As required during the operational day, water or dust suppressant will be applied to access roads and landfill traffic areas, including the dump face area, to control dust.

- As needed, a soil fixative will be applied to the dump face, all disturbed areas of the waste surface, disturbed areas of the operations layer, the dump face peninsula, and access roads.

- Water will be applied to the waste being compacted and the waste being dumped at the dump face. A minimal amount of water will be applied to prevent ponding of water in the landfill. The purpose for the addition of water to the waste upon dumping is to control dust and airborne contamination and to aid proper compaction. Water will be provided by a water truck or temporary and movable piping located near the crest pad building. No provision is available for monitoring the quantity of water applied. Once sufficient water has been added, application will cease until further application is required.

- Water lines will be checked for leaks and repairs made as soon as possible.

- For areas where no traffic is expected and for waste surfaces, a soil stabilization product will be applied as necessary to provide temporary stabilization of the surface.

- As part of winterization activities, a soil stabilization product (i.e., ConCover or equivalent) expected to last 6 months, will be applied over disturbed areas of the landfill to control contamination.

6. REFERENCES AND INTERFACES

- EDF-2236, "NESHAP Compliance Demonstration for the ICDF Complex."

7. RECORDS

- Notation will be made in the logbook that fixative was applied, along with the location and date.

Soil Fixative Application

Prepared by	Tracking No.
P. J. Jessmore/R. C. Shilkett	4.9.3a
Date	Revision
November 7, 2002	0

1. PURPOSE

The purpose of this procedure is to describe how to mix and apply the selected alternative daily and winter cover at the ICDF Complex.

2. SCOPE AND APPLICABILITY

This procedure is applicable to the use of a commercially acceptable soils fixative that may be applied to disturbed areas of the landfill to stabilize soil and control dust. This does not preclude the use of clean soil as a landfill cover if appropriate. ConCover SW or a similar product will be applied to portions of the landfill and other areas as determined by ICDF Operations, and as part of seasonal shutdown. ProGuard SB or similar product is expected to be protective for 7–10 days. ConCover SW or a similar product is expected to be protective for 3–6 months in undisturbed conditions (i.e., absence of traffic in sprayed area).

3. REGULATORY REQUIREMENTS

- 40 CFR 264.301(j): "If the landfill contains any particulate matter which may be subject to wind dispersal, the owner or operator must cover or otherwise manage the landfill to control wind dispersal."
- IDAPA 58.01.01.585 – Rules for Control of Air Pollution in Idaho
- IDAPA 58.01.01.586 – Rules for Control of Air Pollution in Idaho
- 40 CFR 61.92, "Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year."

4. EQUIPMENT

- Application unit (e.g., ConCover All Purpose Spray [CAPS] Machine, 900-gal capacity)
- Vehicle equipped with a heavy-duty eye hitch and capable of towing a 15,000-lb trailer over uneven terrain.

5. IMPLEMENTATION

ProGuard SB and ConCover SW (or similar products) are both a blend of polymers and recycled fibers. When mixed with water, they form a slurry that can be sprayed. ProGuard SB will be used as a short-term cover (7–10 days) for disturbed areas and ConCover SW will be used for long-term

(3-6 months) coverage. The CAPS machine cannon is capable of applying a full 700-gal batch in about 12 minutes. The machine also has a 200-ft application hose for manual spraying of the cover material.

- Application of ProGuard SB (or similar products) for short-term dust control

  - Determine square footage of area to be covered. One bag of ProGuard SB (40 lb) will cover approximately 1,500–1,700 ft^2 with a layer 1/8 in. to 1/4 in. thick. It is anticipated that about 7,500 ft^2 may be treated with each application (five bags).

  - Start the diesel engine of the CAPS machine and allow it to come up to operating temperature.

  - Check the 65-gal capacity flush tank and fill with water if necessary.

  - Open the CAPS machine mix tank hatch and add the proper volume of water based on a ratio of 60 gal of water per bag of ProGuard SB (300 gal for five bags) to be applied.

  - Set the hydraulic-powered agitator at half-speed. Break the contents of each ProGuard SB bag into two or three "chunks" and add them to the mix tank.

  - When the required number of bags have been added, close and secure the hatch. Bring the agitator to maximum speed and mix for a minimum of 30 minutes. If the blend is not applied within an hour, the agitator may be shut off, but should be run for at least 5 minutes to re-suspend the solids before application. ProGuard SB may be kept in the mixing tank for 2-3 days without detrimental effects to the slurry.

  - Position the CAPS machine at landfill dump face as directed by the field supervisor. Using the "long distance" nozzle, apply the ProGuard SB slurry starting at the most distance area of disturbed soil and working closer to the unit. ProGuard SB is green in color for easy identification of covered areas. (Change nozzles for shorter distance and wider spray pattern as necessary.)

  - When application is complete, flush the mixing tank and nozzle system with water from the flush tank. Spray the rinse water on an area as directed by the field supervisor.

  - Return the CAPS machine to its storage location. Document the grid locations treated in the Operations Log.

- Application of ConCover SW (or similar product) for long-term dust control

  - Determine square footage of area to be covered. One unit of ConCover SW (one "A" bag [50 lb] and one "B" bag [35 lb]) will cover approximately 1,000–1,200 ft^2 with a layer 1/8 in. to 1/4 in. thick. A full 700-gal batch will cover 7,000–8,400 ft^2.

  - Application of ConCover SW will be over grid areas where additional placement of waste will not occur for more than 10 days and over all placement areas at the end of the waste placement season in lieu of a soil cover. Use of the 200-ft application hose may be required. If the hose will be used, it must be placed in a plastic sleeve for contamination control. For multiple batches, it may be advantageous to prepare batches at the point of application (landfill cell).

- Start the diesel engine of the CAPS machine and allow it to come up to operating temperature.

- Check the 65-gal capacity flush tank and fill with water if necessary.

- Open the CAPS machine mix tank hatch and add the proper volume of water based on a ratio of 100 gal of water per "unit" of ConCover SW (a full batch is 700 gal for seven units) to be applied.

- Set the hydraulic-powered agitator at half-speed. Break the contents of each ConCover SW "B" bag into two or three "chunks" and add them to the mix tank. After all "B" bags have been added, add the required number of "A" bags.

- When the required number of bags have been added, close and secure the hatch. Bring the agitator to maximum speed and mix for a minimum of 30 minutes. If the blend is not applied within an hour, the agitator may be shut off, but should be run for at least 5 minutes to resuspend the solids before application. ConCover SW may be kept in the mixing tank for 2-3 days without detrimental effects to the slurry.

- Position the CAPS machine at the application point as directed by the field supervisor. Using the "long distance" nozzle, apply the ConCover SW slurry starting at the most distance area of disturbed soil and working closer to the unit. ConCover SW is also green in color for identification of covered areas. (Change nozzles for shorter distance and wider spray pattern as necessary.)

- A second layer of ConCover SW may need to be applied from an opposing angle to give complete coverage if the area is not a fairly even surface. Use of the application hose may be necessary.

- Application using the hose requires an operator at the CAPS machine to control discharge volume/pressure to assist the operator at the hose nozzle.

- When application is complete, flush the mixing tank and nozzle system with water from the flush tank. Spray the rinse water on an area adjacent as directed by the field supervisor.

- Return the CAPS machine to its storage location. Document the grid locations treated in the operations log.

6. REFERENCES AND INTERFACES

- Overview 4.9.3, "Dust/Contamination Control Requirements."

7. RECORDS

- Operating log entries.

Landfill Waste Off-Loading/Placement Requirements

Prepared by	Tracking No.
R.G. Hanson	4.9.5.1
Date	Revision
October 31, 2002	1

1. PURPOSE

The purpose of this procedure is to address the off-loading, placement, and in-cell grouting (if necessary to minimize void space) of waste shipments received at the ICDF. Each of the waste forms identified in the ICDF WAC will be addressed:

- The off-loading of each waste form type will be presented.
- The placement procedure will be summarized for each of the identified waste form types.
- In-cell grouting will be discussed.

2. SCOPE AND APPLICABILITY

This procedure is applicable to all waste shipments received at the ICDF that are disposed in the landfill. Specifically, the following waste forms are addressed:

- Soils
- Wooden or fibrous containers
- Steel containers
- Drums
- Large debris such as steel and concrete beams and monoliths, pipes, and culverts
- Large concrete and building rubble
- Small concrete and building rubble
- Asbestos-containing material
- PCB-containing material
- Soft debris.

This procedure overview also deals with in-cell grouting operations as necessary.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.309, "The owner or operator of a landfill must maintain the following items in the operating recorded required under 264.73"

  - (a)"On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks" and (b)

- 40 CFR 264.310 (a)(4), "…Accommodate settling and subsidence so that the cover's integrity is maintained"

- IDAPA 58.01.01.585 – Rules for Control of Air Pollution in Idaho

- IDAPA 58.01.01.586 – Rules for Control of Air Pollution In Idaho

- 40 CFR 61.92, "Emissions of radionuclides to the ambient air from Department of Energy facilities shall not exceed those amounts that would cause any member of the public to receive in any year an effective dose equivalent of 10 mrem/year"

- 40 CFR 761.50(a)(5), PCB disposal requirements.

4. EQUIPMENT

- A bulldozer placed in the contaminated area will spread the soil and debris waste types to disposal locations.

- A portable crane, forklift, and/or loader will be used to off-load containers, barrels, beams, monoliths, and other waste forms received on flat bed trucks.

- Water at the dump peninsula will be used to control dust and facilitate compaction, as needed.

- Concrete pumping unit capable of placing grout over the waste form as clean area.

- Type II Portland cement.

5. IMPLEMENTATION

The majority of the waste shipments to be received at the ICDF Complex will be soils. However, a small percentage will be made up of the other waste types listed above. Some waste may need to be staged in the cell awaiting the proper placement criteria. If this occurs, waste may not reside in the cell without being placed for longer than 7 days. To accommodate these, arrangements will be made to have necessary equipment at the landfill when the shipments are ready for off-loading.

The scheduled shipments for the week will be reviewed in advance of the delivery date to identify unique equipment needs for the off-loading of specific waste shipments. The following requirements will be implemented to ensure proper waste positioning, as detailed in EDF-ER-286:

- Initial fill sequence:
  - First 2 ft of waste above the operational layer shall be only soil and have a maximum of 20% fines content (passing a U.S. No. 200 sieve), placed in 12-in. layers and compacted.
  - The next 3 ft of waste above the operational layer must be soil—no large metal, concrete, or other material that may damage liner, placed in 12-in. layers and compacted.
  - Remaining lifts can be of general waste (soil, concrete, containers, etc.).
- For bulk waste soil:
  - Packaging requirements for bulk waste soils require a covered container to facilitate a clean off-loading at the dump face by releasing the tarp, viewing the load with a mirror, opening the rear gate, raising the container slightly, rolling the container rearward over the edge and raising the container until the waste slides out.
  - The waste will be spread in 12-in. loose lifts no further than 100 ft from the dump face. The location will be noted on the On-Site Waste Tracking Form (OWTF) and entered in IWTS. To facilitate landfill operations, a compacted base of a given waste stream may be established at the dump face as described above. Once that base is established, future loads of the same waste stream may be dumped onto the compacted base (to facilitate ramp construction), moved over the compacted base to the desired placement location (possibly greater than 100 ft from the dump face), then spread in 12-in. loose lifts and compacted within the 4-grid limit.
  - Throughout the process, water will be applied as necessary to control dust and aid compaction.
- For containerized soil waste:
  - Containers such as wood or fibrous materials, boxes, crates, etc:
    - Containers will be off-loaded and placed either in the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid. In the later case, final placement will be completed as soon as possible. Soil waste will be placed over the containers and compacted.
    - When placed, the containers will be located on waste at least 5 ft above the top of the original operations layer and spaced as specified in EDF-ER-286. Spacing will be determined by the need to compact.
    - The grid location of the container will be recorded on the OWTF and entered into IWTS.
    - The containers will be crushed by the bulldozer, spread into a lift, and covered with soil waste or clean soil prior to compaction.
    - Throughout the process, water will be applied as necessary to control dust and aid compaction.

- Steel containers and drums:
  - Steel containers and drums will be off-loaded in either the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.
  - Steel containers or drums will be located on waste at least 5 ft above the original operations layer and spaced as specified in EDF-ER-286.
  - The grid location of the containers will be recorded on the OWTF.
  - The steel containers and drums are required by the ICDF Complex WAC to be full and will be covered by waste soils and the soil compacted.
  - Throughout the process, water will be applied as necessary, to control dust and aid compaction.

- Debris:
  - Large debris such as steel and concrete beams and monoliths, pipes, and culverts:
    - This debris will be off-loaded in the designated disposal location or in an interim area prior to being placed in the appropriate landfill grid.
    - Debris will be located on waste at least 5 ft above the original operations layer and spaced as specified in EDF-ER-286.
    - The grid location of the debris will be recorded on the OWTF, and entered into IWTS.
    - Debris will be covered by waste soils, and the soil will be compacted.
    - Throughout the process, water will be applied as necessary to control dust and aid compaction.
  - Large and small concrete and building rubble:
    - Large and small concrete and building rubble will be off-loaded using specific equipment. The concrete and building rubble will be off-loaded in the appropriate grid location or off-loaded to an interim area and then moved to the appropriate grid location.
    - Large rubble and concrete will be spaced to ensure that soil waste can be placed between the rubble pieces to ensure appropriate compaction. The rubble will be covered with soil waste and the soils compacted.
    - The grid location of the rubble will be recorded on the OWTF and entered into IWTS.
    - Throughout the process, water will be applied as necessary to control dust and aid compaction.

- Asbestos-containing waste:
    - ACM will only be accepted for ICDF landfill disposal if the material is radiologically contaminated and/or contains hazardous waste constituents and is packaged according to the ICDF Complex WAC. Delivery to the ICDF will be pre-arranged in order to complete prompt delivery and disposal.
    - Signage and barricades will identify the asbestos disposal area in the landfill. This area will consist of a 2-ft-deep trench formed between two berms. The forming of the trench will not disturb previously placed waste.
    - The asbestos waste will be placed in the trench, covered with 6 in. of waste soil or a dust suppression agent, and compacted. This will be completed at the end of the operating day, or within a 24-hour period while the site is in continuous operation, as required by 40 CFR 61.150. Water will be added to control dust, aid compaction, and control the possibility of asbestos fibers becoming airborne, as necessary.
    - The grid location of the ACM will be recorded on the OWTF and in IWTS.
- PCB-containing material
    - PCB ≥500 ppm not allowed in landfill.
    - Liquid PCB must be solidified prior to disposal.
    - Material will be placed pursuant to waste type, e.g., debris, soil.
- Soft debris:
    - Soft debris consists of cardboard, wood, paper, and other biodegradable materials. These will be delivered to the ICDF landfill and disposed. The areas in which soft debris is placed in the landfill will be moved for each delivery to minimize subsidence potential. Soft debris will be staggered throughout the landfill, both horizontally and vertically to achieve compaction requirements.
    - The grid location of the soft debris will be recorded on the OWTF and in IWTS.
    - Soft debris will be distributed and 12-in. lifts of bulk soil waste will be placed over the soft debris and compacted. Water will be added as necessary to control dust and aid compaction.
- In-Cell Grouting
    - Debris and other waste types that are expected to be difficult to meet the void space and compaction requirements or present a potential danger to the operator and/or equipment may be placed in the landfill and grouted in place to meet the compaction requirement.
        - Place the waste needing in-cell grouting into the desired landfill grid locations
        - Place and compact soil around the grouting area to form a trench/container berm or around the waste container
        - Pump grout into the in-cell grouting area and fill to the desired elevation. The grout shall consist of Class 20 normal-weight concrete with a minimum 28-day

comprehensives strength of 2,000 psi. The grout slump at the point of placement shall be between 3 and 6 in. The manufacture and delivery of all concrete grout shall conform to ASTM C94.

– Allow grout to cure to the required hardness (i.e., 50 psi) prior to placing additional waste over the grouted area.

6. REFERENCES AND INTERFACES

- EDF-ER-286, "Landfill Waste Placement Plan"
- ASTM C94/C94M-00e2, 2000, "Standard Specification for Ready-Mixed Concrete," American Society for Testing and Materials, 2000.

7. RECORDS

- OWTF for each of the waste shipments disposed at the ICDF landfill
- IWTS electronic records
- Map showing waste disposal location(s) and contents of each cell
- Operations Log Book entries.

Waste Compaction and Inspection

Prepared by	Tracking No.
R.G. Hanson	4.9.5.3
Date	Revision
November 1, 2002	1

1. PURPOSE

The purpose of this procedure is to identify the requirements for waste compaction and inspection.

2. SCOPE AND APPLICABILITY

This procedure applies to the compaction of waste placed in the ICDF landfill. Compaction testing is a best management practice that minimizes the chance of subsidence of the closure cap.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.309 (a), "…On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks."
- 40 CFR 264.309(b), "…The contents of each cell and the approximate location of each hazardous waste type within each cell."
- 40 CFR 264.310(a)(4), "Accommodate settling and subsidence so that the cover's integrity is maintained."

4. EQUIPMENT

- Dozer to spread waste across the disposal grid and compact
- Water availability at the waste dump face to control dust and provide moisture to aid compaction
- Compaction measuring instrument (e.g., nuclear density gauge, Humboldt GeoGauge).

5. IMPLEMENTATION

- Radiological debris and soil waste is off-loaded at the dump face. The dump face drop from the peninsula floor to the active waste floor is to be less than 6 ft.
- The waste will be spread in 12-in. loose lifts no further than 100 ft from the dump face. The location will be noted on the On-Site Waste Tracking Form (OWTF) and entered into IWTS. To facilitate landfill operations, a compacted base of a given waste stream may be established at the dump face as described above. Once that base is established, future loads of the same waste stream may be dumped onto the compacted base (to facilitate ramp construction), moved over the compacted base to the desired placement location (possibly greater than 100 ft from the dump face), then spread in 12-in. loose lifts and compacted within the 4-grid limit.

- Large debris will be placed consistent with EDF-ER-286. Soil will be placed over and around the debris to ensure voids are filled.

- The dozer operator will pass (a pass is over and back) over the waste repeatedly to provide compaction. Initially, the dozer will pass over the waste three times. If required, additional passes will be specified in order to achieve the desired compaction. The desired compaction is 90 to 95% relative compaction based on ASTM D698 Standard Test Method. Testing must be done in the upper 12 in. of the waste level.

- Containerized waste or monoliths will be placed and surrounded by soil waste and compacted by the same techniques.

- After 2,500 yd^3 of soil have been dumped, an in-place compaction test will be performed to determine if the compaction procedure is accomplishing the desired outcome. Based on these results, the number of passes can be modified to accomplish the desired compaction density. In-place testing will be performed using either a nuclear density gauge per ASTM D-2922, or a Humboldt GeoGauge per ASTM D-6758.

- The compaction test results will be entered into the operations log. If remedial action is required based on the test results, it will be implemented on the following operations shift.

- Visual inspections of the landfill will be performed to avoid the over-application of water for dust control or compaction (e.g., puddles or ponding).

6. REFERENCES AND INTERFACES

- EDF-ER-286, "Waste Placement Plan"

- Overview 4.9.5.1, "Landfill Waste Off-Loading/Placement Requirements"

- ASTM D698, "Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort"

- ASTM D2922, "Standard Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods, Shallow Depth"

- ASTM D6758, "Standard Test Method for Measuring Stiffness and Apparent Modulus of Soil and Soil-Aggregate In-Place by an Electro-Mechanical Device."

7. RECORDS

- Daily operating log entries.

Performance of Landfill Compaction Equipment

Prepared by	Tracking No.
R. C. Shilkett	4.9.5.3a
Date	Revision
November 7, 2002	0

1. PURPOSE

The ICDF will analyze the performance of the selected compaction equipment prior to beginning waste placement to develop method specification for the different types of bulk soil to be delivered to the landfill.

2. SCOPE AND APPLICABILITY

This method specification will apply to all soils placed in the landfill. Initially, three types of soil will be evaluated:

- Sands and gravel (alluvium)
- Silt and sandy loam (top soil)
- Silt and clay material (old alluvium).

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- Caterpillar D9R bulldozer or similar equipment
- Compaction measuring instrument (e.g., nuclear density gauge, Humboldt GeoGauge).

5. IMPLEMENTATION

Testing will be performed in an area near the ICDF landfill permanent stockpile. Two of the three expected soil types are readily available from the stockpile. Material representative of a silt and clay mixture will have to be located. If no source is available, the first loads of that type of waste will be used to identify the number of passes for the compaction equipment and the test will be performed inside the landfill.

- The area used for the test will be approximately 25 × 25 ft to simulate a typical 20 yd^3 load of waste.
- Density readings will be taken of the area to confirm that the subgrade of the location is suitable for the tests. Any areas that do not meet the 90% minimum compaction will be compacted until the 90% minimum is obtained.

- A sample of each of the specific soil type will initially be tested for moisture-density relationship, gradation, and Atterberg limits prior to the test.

- The specific material to be tested will be spread in a uniform 12-in.-thick lift over the prepared 25- × 25-ft area.

    - The D9 dozer or other proposed compaction equipment will make one pass over the entire area and then in-place density, moisture, and soil stiffness per ASTM Standard D6758 testing will be performed at 5–10 locations for correlation between methods.

    - The dozer or compaction equipment will make repeated passes with the same testing to continue until the full range of compaction is achieved. The density and soil stiffness as function of passes can be compared and the number of passes at which 90% of ASTM Standard D698 was achieved then selected. The corresponding soil stiffness at this point can be obtained for in-place verification.

    - Following successful correlation between in-place density and soil stiffness, the GeoGauge may be used with other compaction verification techniques (such as nuclear gauge density measurements) subject to Agency approval.

- For each soil type, a minimum number of passes for the dozer or other compaction equipment will be determined. This minimum will be used during waste placement operations to monitor adequate compaction.

6. REFERENCES AND INTERFACES

- ASTM D698, "Test Method for Laboratory Compaction Characteristics of Soil Using Standard Effort"

- ASTM D6758, "Standard Test Method for Measuring Stiffness and Apparent Modulus of Soil and Soil-Aggregate In-Place by an Electro-Mechanical Device"

- Overview 4.9.5.3, "Waste Compaction and Inspection."

7. RECORDS

- Test results report

- Operations log entries.

Radiological Survey Requirements

Prepared by	Tracking No.
R. G. Hanson	4.9.5.5
Date	Revision
06-06-02	0

1. PURPOSE

Trucks that enter the ICDF landfill with a waste shipment for disposal will be subjected to a radiological survey of the rear gate, tires, and rear area of the truck before being released to return to the queuing area to off-load the container. Other vehicles that enter the landfill also will undergo a similar radiological survey before leaving the landfill.

2. SCOPE AND APPLICABILITY

This procedure addresses the radiological survey of trucks that will be performed each time a truck brings a load into the landfill and off-loads at the dump-face.

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- Appropriate radiological survey equipment as determined by the RCT.

5. IMPLEMENTATION

Following the completion of the off-loading of waste from the dump truck/shuttle truck and container, the container will be lowered and the truck moved forward away from the dump face. The RadCon Technician will perform a radiological survey of the container gate area, the rear tires, and the surrounding area of the shuttle truck. If background is high, the truck will be moved to a lower background area where a radiological survey can be performed.

- If no contamination is detected, the truck will be released and allowed to return to the ICDF queuing area to off-load the empty container or exit the ICDF.
- If contamination is detected, the truck will be decontaminated in place, moved to a designated decon area in the landfill, or moved to the decon building. A more specific survey will be performed to identify the area of the contamination. Decon procedures will be implemented to remove the contamination. The results of the radiological survey and decon process shall be recorded.

6. REFERENCES AND INTERFACES

None.

7. RECORDS

- Record the results of failed surveys in the radiological survey log.

Leachate Pump Removal and Insertion

Prepared by	Tracking No.
R. C. Shilkett	4.10.2
Date	Revision
November 2, 2002	1

1. PURPOSE

The purpose of this procedure is to describe how to safely remove or insert any leachate or leak detection sump pump at the landfill or evaporation crest pad building.

2. SCOPE AND APPLICABILITY

This procedure applies to the leachate collection recovery pumps in the landfill and leak detection chamber pumps in the landfill and evaporation pond cells.

3. REGULATORY REQUIREMENTS

None identified.

4. Equipment

- Wall-mounted winch
- Adjustable platform cart to receive the leachate pump from the riser
- Hand tools for plastic tie removal and hose reels for the power and transducer cables
- Terri-cloth wipes and a bag to collect used wipes and plastic ties.

5. IMPLEMENTATION

There are two sizes of leachate pump (~10- and 100-gpm) but the process for removal or insertion is similar. The number of flexible pipe lengths to be removed/inserted for different pumps may vary.

- Prerequisites
  - When warranted by operations or maintenance, place the pump removal/insertion activity for the specific pump on the plan-of-the-week and/or plan-of-the-day ICDF operating schedule.
  - Prepare a lock-out/tag-out (LO/TO) for the isolation valve for the specific pump.
  - This work will be performed under a RWP since the material removed from the pump riser may be contaminated.
  - Cover the floor of the crest pad building with plastic sheeting and blotter paper for contamination control.

- Set-up appropriate radiation control boundaries and a step-off pad area to control entrance into the work area.

- Observe the sump level indicator for the pump that is to be removed to verify that the pump does not need to be operated prior to removal. If the sump is over 50% of the "pump start" level, operate the pump in the "hand" mode until the sump level is down to the "pump shut-off" level for automatic mode.

- Consult with the ICDF facility engineer for specific guidance as needed.

- Performance

  Pump Removal:

  - Open the identified electrical disconnect for the pump to be removed. Unplug the power cord at the disconnect receptacle. LO/TO is not required since this is a "cord and plug" unit and the plug is in the control of the personnel performing the work.

  - Disconnect the pump transducer cable from the appropriate wall receptacle.

  - Sleeve the exposed portions of the power and transducer cables as instructed by the RCT.

  - Close the associated isolation valve and install the appropriate LO/TO on the valve.

  - Remove the flexible hose connection from the specific pump riser.

  - Remove the blind flange on the riser and position any required cable guides or pulleys to keep the cable from contacting the riser opening.

  - Connect the stainless steel pump cable through the guides and to the winch.

  - Slowly pull the first section of flexible pipe out of the riser. Clip off the plastic cable ties that secure the power and transducer cables to the pipe.

  - If needed, dry the cables (pump, power, and transducer) and pipe section. Remove the pipe section and store in a convenient location in the room.

  - Pull the next pipe section and repeat the process. Start winding the power and transducer cables on their respective hose reels.

  - Repeat the process of pipe removal and winding the cables on the hose reels until the flexible pipe section is exposed. At this point, position the adjustable platform cart to receive the pump as it exits the riser.

  - Pull the pump onto the cart platform. Remove the last section of pipe. Detach the cable from the pump case and wind up the slack cable. Wipe down the surfaces of the pump.

  - The pump is ready for maintenance performance.

- Pump insertion:
    - Position the cart and pump at the riser opening. Attach the pump cable and first section of flexible pipe. Attach the electrical power and transducer to the pipe section.
    - Feed the pump into the riser.
    - Attach additional sections and lower the pump into the riser until all sections have been attached and inserted. Cable ties shall be installed to secure power cable, stainless steel cable, and transducer cable to the pipe. Cable ties shall be placed at spacing of one tie per pipe section.
    - Disconnect the stainless steel pump cable through the guides and to the winch.
    - Remove any cable guides or pulleys and install the riser flange.
    - Install the flexible hose connection to the riser.
    - Remove the sleeve from the power and transducer cables as instructed by the RCT.
    - Connect the power cord at the disconnect receptacle.
    - Connect the pump transducer cable to the appropriate wall receptacle.
    - Remove the LO/TO and open the appropriate isolation valve.
    - Close the identified electrical disconnect for the pump.
    - Ensure that the pump control switch is in the “auto” position.
- Post-maintenance testing:
    - Recalibrate pump and/or transducer.
    - Ensure pump/transducer working prior to leaving site.

6. REFERENCES AND INTERFACES

- Drawing IN-201, “Landfill P&ID”
- Drawing IN-202, “Evaporation Ponds P&ID.”

7. RECORDS

- Work control system records.

Access and Perimeter Control

Prepared by	Tracking No.
P. J. Jessmore	4.11
Date	Revision
May 9, 2002	1

1. PURPOSE

The purpose of this procedure is to address ICDF Complex access/perimeter control and facility posting requirements to ensure access to the ICDF Complex is monitored and controlled and proper signage identifying controlled areas are posted.

2. SCOPE AND APPLICABILITY

This procedure addresses ICDF Complex access control for ICDF employees and visitors, escorting requirements, inspections, and prohibited items.

3. REGULATORY REQUIREMENTS

40 CFR 264.14(b), "Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (2) of this section, a facility must have: (1) a 24-hour surveillance system (e.g., a television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility: or (2)(i) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and (ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility)."

40 CFR 264.14(c), "Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (2) of this section, a sign with the legend, 'Danger-Unauthorized Personnel Keep Out,' must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility… And must be legible from a distance of at least 25 feet…"

4. EQUIPMENT

None identified.

5. IMPLEMENTATION

- The ICDF Complex is considered a property protection area. It is completely surrounded by a fence with gates and other entrances designed to control entry.

- Identification tags that list, at a minimum, the owner's name, work organization, and work phone number are required on all hand-carried articles brought into the ICDF Complex.

- Normal employee access to the ICDF Complex will be through the administration area and the north gate.
- ICDF Complex authorized employees have unrestricted access to enter and leave ICDF Complex areas.
- ICDF Complex access points will be open during business hours and closed at the end of the business day. The admin trailer, the entrance security gate, and other gates, as appropriate (e.g., evaporation pond gate), will be locked/secured at the close of normal working hours.
- ICDF Complex personnel are required to have a DOE-ID-issued INL badge and appropriate dosimetry, as required, for their particular work activities.
- Visitors will be checked for the appropriate training and dosimetry, as required, for the areas to be entered.
- Visitor access will be through the administration area.
- Visitors to the ICDF Complex are required to be on official business.
- Visitors are required to obtain dosimetry, as appropriate, and a DOE-ID-issued INL visitor's badge and sign the visitor log located at both the INTEC guardhouse and at the appropriate ICDF access control point(s).
- Visitors who have a badge but not the appropriate need to enter, proof of training and dosimetry will be allowed to enter the uncontrolled areas of the site (e.g., the administration area) but will not be allowed within the posted exclusion zones.
- Visitors who have the need to enter areas other than uncontrolled areas of the site require an escort.
- Badges and dosimetry, as required, are to be worn at all times in plain view, above the waist and below the neckline, unless health and safety considerations prohibit.
- Personnel who forget their badge must show a picture ID to security personnel to obtain a temporary badge denoting proper access authorization.
- If an employee does not have picture ID, the employee's manager or designee can be contacted for positive employee identification.
- ICDF Complex personnel are required to have current and appropriate training to maintain access to the ICDF Complex.
- Keys to individual trailers, gates, file cabinets, etc., will be issued to ICDF Complex personnel on an as-needed basis and controlled through an established key control program.
- Vehicular access (e.g., operations equipment) into the ICDF Complex is controlled by a gate that can be locked. Drivers must check in at the admin building prior to entry.

- Vehicular/personnel access into the ICDF evaporation pond is controlled by a gate that can be locked. Drivers must check in at the admin building prior to entry. See ICDF RD/CWP Drawing C-201).

Escorting Requirements

- All visitors who need to enter the CERCLA or hazardous operations areas require an escort.

- Escorts are required to complete the appropriate training prior to escorting visitors. Subcontractor personnel who have completed escort training and have special approval by INL Physical Security are allowed to escort other subcontractor personnel or visitors.

Personnel Inspections

- Periodic inspections will be performed on packages, boxes, briefcases, backpacks, and similar articles carried by or in the possession of employees and visitors when entering or exiting the ICDF Complex. Routine inspections are not planned as part of ICDF Complex operations.

- Failure to comply with a random inspection will result in denial of access and disciplinary action up to and including termination. INEEL Site Security will be contacted in these instances.

- Prohibited items (see below) identified during personnel inspections will be confiscated.

- Investigating and reporting of security incidents will be performed in accordance with INL Site procedures and guidelines.

Prohibited Items

- Prohibited items include but are not limited to firearms, ammunition, alcoholic beverages, illicit drugs, explosives, wiretapping or eavesdropping devices, or any dangerous or potentially dangerous instruments or materials likely to cause substantial injury to persons, property, or animals.

6. REFERENCES AND INTERFACES

- DOE/ID-10848, ICDF Remedial Design/Construction Work Plan.

7. RECORDS

- Visitor traffic log.

Landfill Leachate Transfer to a Truck

Prepared by	Tracking No.
R. C. Shilkett	4.12.4
Date	Revision
November 1, 2002	1

1. PURPOSE

This procedure would be used in an emergency situation if the evaporation pond cells were not available to accept liquids. Performance of this procedure would allow the ICDF to continue to meet regulatory requirements. Specifically, the following will be addressed:

- Prevent the hydraulic head over the primary liner of the landfill from exceeding 30 cm (1 ft) by automatically transferring the leachate to the evaporation pond.

- Transfer of landfill leachate to a tank via the truck loading/unloading facility. This activity would only be performed if both evaporation pond cells were approaching capacity or if circumstances precluded the transfer of liquid from one cell to the other.

2. SCOPE AND APPLICABILITY

- This procedure applies to all four pumping systems in the landfill.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.301(c)(2) "…ensure that the leachate depth over the (landfill) liner does not exceed 30 cm (one foot)."

- 40 CFR 264.221(c)(3) "An owner or operator (of a surface impoundment) shall collect and remove pumpable liquids in the sumps to minimize the head on the bottom liner."

- 40 CFR 264.302(b) "To determine if the action leakage rate has been exceeded, the owner or operator must convert the weekly or monthly flow rate from the monitoring data obtained under §264.303(c) to an average daily flow rate (gallons per acre per day) for each sump. Unless the Regional Administrator approves a different calculation, the average daily flow rate for each sump must be calculated weekly during the active life and closure period, and monthly during the post-closure care…."

4. EQUIPMENT

This procedure addresses the use of the low-volume leachate pump. A similar approach would be used (with different valve alignments) to use the high-volume pump or either of the leak detection sump pumps.

- Landfill low-volume leachate collection recovery pump (10 gpm) in manual operation mode.

- Portable tank(s) of known capacity.

- Radios or other means of constant communication between the truck loading facility and landfill crest pad building.

- There is no level control instrumentation associated with this process. Total flow can be determined on FT 203-2 in the landfill crest pad building and on FT CD-211 in the evaporation pond crest pad building.

5. IMPLEMENTATION

- Install appropriate lock-out/tag-out (LO/TO) on the landfill and the evaporation pond pumps to prevent any other liquid being automatically pumped to the portable tank.

- Connect the discharge line to the tank at the truck loading facility.

- Note the flow totalizer reading.

Note that the only overflow protection capacity is that of the combined sump. The discharge of that sump pump would only go back into the tank. Therefore, extreme care must be taken to avoid overfilling a tank.

- When the tank is at approximately 75% capacity, an operator must start to observe the level in the tank and relay the information to the operator at the landfill crest pad building pump controller.

- As the tank approaches capacity, stop the pump and close the valve. Record the total flow pumped to the tank.

- Disconnect the fill line from the tank. If loading another tank, establish the connection, open the valve, note the flow totalizer readings, then restart the pump.

- When transfers are complete, drain and rinse the hose into the truck unloading sump and package equipment per RCT direction.

- Record the volume of leachate transferred from the sump in the daily Operating Log.

- Record the transfer in the waste tracking system.

6. REFERENCES AND INTERFACES

- Drawings IN-201, “Landfill P&ID” and IN-202, “Evaporation Pond(s) P&ID”

- Overview 4.12.6, “Landfill Action Leakage Rate Response Plan.”

7. RECORDS

- Record in the Operating Log the volume of liquid transferred from the sump to each tank. Also, record the shipping documentation number(s) and destination of each load.

Landfill Surface Storm Water Sump Pumping

Prepared by	Tracking No.
R. C. Shilkett	4.12.5
Date	Revision
November 2, 2002	1

1. PURPOSE

The purpose of this procedure is to address removal of accumulated storm water from the unlined surface sump in the southwest corner of the landfill.

2. SCOPE AND APPLICABILITY

This procedure applies to the unlined sump in the southwest corner of the landfill.

3. REGULATORY REQUIREMENTS

40 CFR 264.301(i) "Collection and holding facilities (e.g., tanks or basins) associated with run-on and run-off control systems must be emptied or otherwise managed expeditiously after storms to maintain design capacity of the system."

4. EQUIPMENT

- Temporary piping from the sump to a storm water runoff ditch outside of the landfill
- Portable sump pump of sufficient volume and head capacity to lift water over the landfill berm and a portable generator to power the sump pump, if needed.

5. IMPLEMENTATION

- Perform a radiological sampling and analysis of the sump contents to confirm that the water is nonradioactive. Perform a hazardous waste determination before the water is discharged to the storm water runoff system.
- If the sampling shows the contents to be contaminated, transfer to the evaporation pond via tanks.
- Lay temporary piping on the surface of the operations layer from the sump location to a storm water runoff ditch outside of the landfill berm. Provide erosion protection at the end of the discharge pipe in the storm water runoff ditch. Install the sump pump and generator, if needed.
- Start the pump and note the time that the pump was started. Observe the storm water runoff ditch to verify that the water is flowing as intended.
- Stop the pump when as much water as practical has been removed. Note the time the pump was stopped. Break the connection from the pump to the temporary piping and allow the water to drain back into the sump.

- Multiply the time in minutes by the pump capacity in gpm to obtain an estimate of the volume pumped. Record in the Operating Log the volume of water transferred from the sump to the storm water runoff system.

- If contaminated water was removed, evaluate the situation and remove the contaminated sediments as directed by ICDF management and appropriate personnel. Perform radiological surveys as the work progresses. Contaminated sediment will be disposed in the ICDF landfill.

- Contaminated equipment will be packaged per RCT direction and stored in a radioactive materials storage area in the decon building.

6. REFERENCES AND INTERFACES

- Overview 4.8.1, "ICDF Landfill Leachate Monitoring and Transfer to the ICDF Evaporation Pond"

- DOE/ID-10886, *ICDF Operations Waste Management Plan*.

7. RECORDS

- Completed weekly inspection reports

- Maintenance or response action documentation

- IWTS records for waste management.

Landfill Action Leakage Rate Response Plan

Prepared by	Tracking No.
R. C. Shilkett	4.12.6
Date	Revision
November 2, 2002	1

1. PURPOSE

The purpose of this procedure is to present a systematic approach to address the occurrence of a leakage rate in excess of action level.

2. SCOPE AND APPLICABILITY

This procedure applies to any situation where the landfill liner leakage rate exceeds the action level. The ALR for the landfill is calculated to be 1,380 gal/day (EDF-ER-269, "Leachate Generation Study").

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- The ICDF Complex instrumentation and control system for flow rate data
- Excavation equipment and materials as needed, should waste removal and/or liner repair be required.

5. IMPLEMENTATION

- Schedule of Agency notifications (see Section 9 of this document regarding more information on notifications):
  - ICDF Complex management will notify DOE-ID at the time that the flow exceedence of the ALR is identified.
  - DOE-ID will provide written notification (e.g., email, fax) to the DEQ and EPA that the flow is determined to have exceeded the ALR as soon as is practical (not to exceed 7 days) after making the determination.
  - DOE-ID will provide written information of the incident to the DEQ and EPA, regarding the amount of liquids; possible location, size, and cause of any leaks; and short-term actions taken and planned. The information will be provided within 14 days of the determination.
  - DOE-ID, in consultation with the DEQ and EPA, will prepare a corrective action plan detailing the results of analyses, actions taken, and actions planned.

- As long as the flow exceeds the ALR, DOE-ID will prepare and submit monthly written notice to the DEQ and EPA detailing additional actions taken and actions planned.

- Assessments for size, location, and cause of the leak:
  - Review precipitation data from the INTEC Grid 3 tower and CFA.
  - Compare the LCRS flow rates and weekly LDRS flow totals.
  - Review trends in operational use of water for compaction and dust control. Visual inspection of the landfill will be performed to avoid the over-application of water for dust control or compaction (e.g., puddles or ponds).
  - Examine the exposed side slopes and floor of the landfill for signs of erosion or damp areas.
- Assessments for the impact of the leak:
  - Determine if the LDRS flow rate is approaching or exceeding the LDRS pump capacity. The capacity of the LDRS pump is 15,840 gal/day.
  - Compare chemical and radiological analyses of the leachate with the profile information of disposed wastes and disposal locations.
  - Check the Secondary Leak Detection and Recovery System for evidence of a breach.
  - Perform limited waste retrieval to confirm the location of a leak.
- Short-term response actions:
  - Stop placement of waste until the source of the leak is located and repairs are completed.
  - Repair any observed damage using procedures, methods, and materials equivalent to the original ICDF landfill design and construction quality assurance requirements.
  - Continue to pump the LCRS to remove leachate as it is available.
- Develop appropriate long-term response actions.

6. REFERENCES AND INTERFACES

- EDF-ER-269, “Leachate Generation Study.”

7. RECORDS

- Documentation of all actions and results.

Evaporation Pond Action Leakage Rate Response Plan

Prepared by	Tracking No.
R. C. Shilkett	4.12.7
Date	Revision
November 2, 2002	1

1. PURPOSE

The purpose of this procedure is to present a systematic approach to address the occurrence of a leakage rate in excess of action level.

2. SCOPE AND APPLICABILITY

This procedure applies to any situation that the evaporation pond cell leakage rate exceeds the action level. The action leakage rate (ALR) for an evaporation pond is calculated to be 1,590 gal/day (EDF-ER-280, "Landfill Leachate Collection System Design Analysis").

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

- The ICDF Complex instrumentation and control system for flow rate data
- Liner material and repair equipment as needed.

5. IMPLEMENTATION

- Schedule of Agency notifications (see Section 9 of this document regarding information on notifications):
  - ICDF Complex management will notify DOE-ID at the time that the flow exceedence of the ALR is identified.
  - DOE-ID will provide written notification (e.g., email, fax) to the DEQ and EPA that the flow is determined to have exceeded the ALR as soon as is practical (not to exceed 7 days) after making the determination.
  - DOE-ID will provide written information of the incident to the DEQ and EPA, regarding the amount of liquids; possible location, size, and cause of any leaks; and short-term actions taken and planned. The information will be provided within 14 days of the determination.
  - DOE-ID, in consultation with the DEQ and EPA, will prepare a corrective action plan detailing the results of analyses, actions taken, and actions planned.

- As long as the flow exceeds the ALR, DOE-ID will prepare and submit monthly written notice to the DEQ and EPA detailing additional actions taken and actions planned.

- Calculate the daily leakage rate for the evaporation pond leak detection system:
  - Calculate the daily leakage rate in gallons/acre/day based on the weekly ICDF evaporation pond instrumentation and control system flow totalizer readings.
- Assessments for size, location, and cause of the leak:
  - Review precipitation data from the INTEC Grid 3 tower and CFA
  - Review the LDRS flow rates and weekly totals.
- Assessments for the impact of the leak:
  - Determine if the LDRS flow rate is approaching or exceeding the LDRS pump capacity. The capacity of the LDRS pump is 17,280 gal/day. The ALR for one evaporation pond is 1,590 gal/day.
- Short-term response actions:
  - Stop waste additions to the leaking pond.
  - Transfer a portion of the contents of the leaking pond to the non-leaking pond. Evaluate any change in leakage rate relative to pond level.
  - Repair any observed damage using procedures, methods, and materials equivalent to the original ICDF evaporation pond design and construction quality assurance requirements.
- Develop appropriate long-term response actions.

6. REFERENCES AND INTERFACES

- EDF-ER-280, “Landfill Leachate Collection System Design Analysis.”

7. RECORDS

- Documentation of all actions and results.

Liquid Transfers from an Evaporation Pond to a Tank

Prepared by	Tracking No.
R. C. Shilkett	4.12.8
Date	Revision
March 11, 2002	0

1. PURPOSE

The purpose of this procedure is to address transfer of liquids from one evaporation pond cell to a tank via the truck loading/unloading facility.

2. SCOPE AND APPLICABILITY

This activity would only be performed if both evaporation pond cells were approaching capacity or if circumstances precluded the transfer of liquid from one cell to the other.

3. REGULATORY REQUIREMENT

No ARARs identified.

4. EQUIPMENT

- High-volume leachate pump (~100 gpm).
- Apparatus for placing the leachate transfer pump in the cell to be pumped. This may require the use of a truck-mounted crane.
- Tank(s).
- Radios or visual communication between the truck loading facility and high-volume pump control location.
- There is no flow or level control instrumentation associated with this process.
- Automatic leachate transfer processes from the landfill and combined sump (SU-CD-107) pump must be put in the “off” position while tank loading is being performed.

5. IMPLEMENTATION

- Approved shipping documentation for all loads to be transferred.
- Install the leachate transfer pump, power cable, and discharge hose.
- Position the transfer pump such that sediments are not sucked into pump.
- Ensure that the valve (SWV-CD-34 or –38) to the cell that is not being pumped is open and the valve to the cell that will be pumped is closed.
- Verify that the landfill sumps and combined sump levels are such that the sump pumps will not be required to start automatically.

- If a sump appears to be near the level requiring pumping, then refer to the abnormal operating procedure for pumping from the landfill sumps to a tank.

- If sump levels indicate that pumping is not required, install an appropriate lock-out/tag-out (LO/TO) on landfill leachate recovery pumps (CD-203-1 and CD-203-2), leak detection pumps (CD-204 and CD-208), landfill crest pad building sump pump (CD-205), and the combined sump pump (CD-207). The SSSTF decon building pump station will also need a Level I LO/TO.

- Valve alignments (for pumping from the east evaporation pond) prior to starting the high-volume pump are Valves SWV-CD-28, -32, -34, -43, and -45 open; Valves SWV-CD-21, -27, -29, -31, -38, -40, and -42 closed. To pump from the west pond, Valve SWV-CD-38 would be open and SWV-CD-34 closed.

- Connect the discharge line to the tank at the truck loading facility.

- Start the pump and note the time that the pump was started. The high-volume pump is rated at 100 gpm. Estimate the number of minutes it will take to fill the truck to 75% of its capacity.

- Note that the only overflow protection capacity is that of the combined sump. The discharge of that sump pump would only go back into the tank. Therefore, extreme care must be taken to avoid overfilling a tank.

- When the tank is at approximately 75% capacity, an operator must start to observe the level in the tanker and relay the information to the operator at the pump controller.

- As the tank approaches capacity, stop the high-volume pump and close Valve SWV-CD-32. Note the time the pump was stopped.

- Disconnect the discharge line from the tank. If loading another tank, establish the connection, open Valve SWV-CD-32, and restart the pump.

- When transfers are complete, return the system to normal automatic operating mode with the following valve alignments (east evaporation pond example): Valves SWV-CD-29, -31, -32, -38, -42, and -43 closed; Valves SWV-CD-21, -27, -28, and -41 open. Remove and clear LO/TO on all pumps.

- Determine the approximate amount of liquid transferred to each tank by multiplying the number of minutes the pump operated by 100 gpm.

- Record in the Operating Log the approximate volume of liquid transferred from a cell to the tank(s). Also, note the shipping documentation number(s) and destination of each load and record information in IWTS.

6. REFERENCES AND INTERFACES

- Drawing IN-202, “Evaporation Ponds P&ID.”

7. RECORDS

- Record the volume transferred from each cell to a tank.

ICDF Staging Pile Management

Prepared by	Tracking No.
R. C. Shilkett	5.1
Date	Revision
November 6, 2002	1

1. PURPOSE

The purpose of this procedure is to provide guidance for the management of wastes staged at the bulk soil stockpile at the ICDF.

2. SCOPE AND APPLICABILITY

This procedure applies to the design and preparation; stockpiling, covering, and removal of waste; and preparation for stockpiling of other wastes at the bulk soil stockpile located west of the contaminated equipment pad.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.554, "Staging Piles."

4. EQUIPMENT

- A loader or similar equipment for stockpiling, contouring, and transferring soil waste materials
- Equipment for controlling fugitive dust emissions
- Liner materials for protection of the compacted base of the area
- Signage and physical barrier materials
- Cover materials and necessary items to prevent covers from being lifted by wind action.

5. IMPLEMENTATION

This section lists a variety of materials and some "concept" options for management of a staging pile. Final selections of materials and methods will be guided by the waste stream characteristics, volumes, and evaluations of the effectiveness of various proposed methods.

- Design
  - The bulk soil stockpile staging area(s) (see Figure 5-1, ICDF Complex Operation and Maintenance Plan, DOE/ID-11000) are a maximum of 150 × 270 ft. One will be located west of the contaminated equipment pad and the other at the SSA at an elevation above the 100-year flood plain.

- Figure 1 shows a concept having the capability of constructing up to six “staging cells” to minimize the area that will be contaminated by soil staging.

- Materials of construction

  - Subbase will be compacted gravel.

  - The liner system could be a geosynthetic, asphalt, or concrete slab (minimum 4-in. thick). Geosynthetics could be 30-, 60-, or 100-mil thick HDPE with or without a geosynthetic cushion. Compatibility between the liner material and expected wastes will be a criterion in liner selection. An EDF that discusses the alternatives for protection of staging area liner systems will be given to the Agencies for review prior to the construction of the cells.

  - Compatibility between the cover material and expected wastes will be a criterion in cover selection. Another criterion will be the ability to withstand sustained winds of 35–50 mph with appropriate anchorage.

- Construction, installation, and testing

  - Liner materials will be installed and seams inspected/tested per manufacturer’s specifications.

  - Cover materials are expected to contain only factory seams. If field seaming is necessary, seaming and inspection/testing will be per manufacturer’s specifications.

  - Soils in the waste staging piles are to be managed in a manner to eliminate any potential run-on/run-off from entering the staging pile, or run-off from contacting the soils, thus eliminating the need to contain run-off. The staging piles will be designed (See Figure 1) as follows:

  - The soils pile shall be placed on an impervious liner. There will be at least a 2% slope away from the soil waste pile to insure proper drainage.

  - The bottom liner material for the soil shall be of sufficient strength/design to withstand the planned staging and subsequent removal of soils. The technical specifications will be established in an EDF that discusses alternatives for protection of staging area liner systems that will include requirements for base material and equipment restrictions if necessary.

  - The bottom liner will extend at least 5 ft beyond every edge of the waste soil pile

  - An impervious man-made material (cover) shall be used to cover the soil piles at all times that the soil is not being actively managed (placing, sampling, or removing waste). The cover must extend beyond the bottom liner and be secured to ensure that the staging pile soils are not exposed to the wind, precipitation, or elements.

  - The cover shall be an impervious material sufficient to withstand site conditions, (e.g., sun, wind, cold, heat, and movement to expose/cover the working face).

- Stockpiling of bulk soil in a staging cell

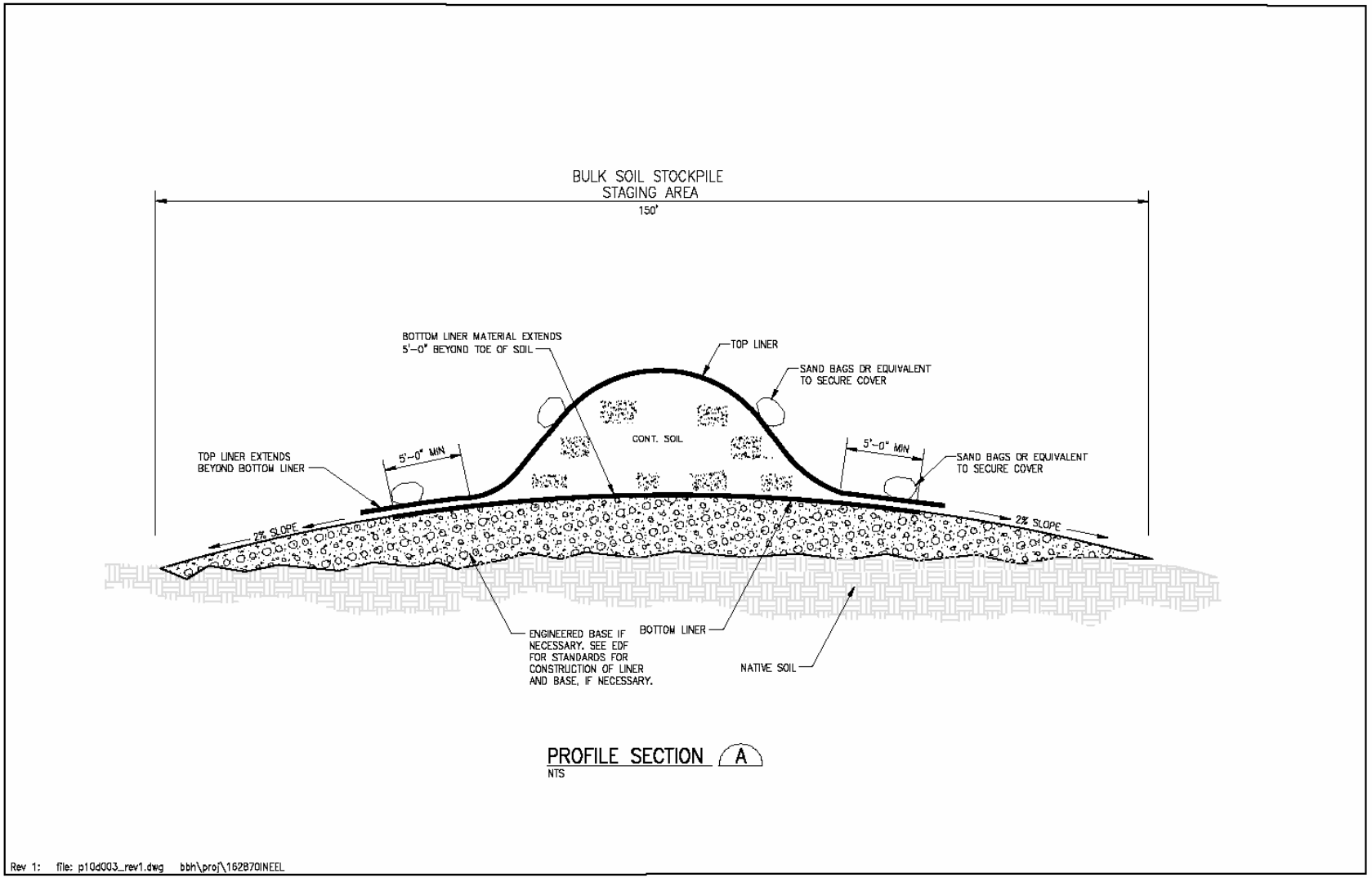

Figure 1. Conceptual view for the ICDF bulk soil stockpile staging cells.

- Waste management in staging piles - The wastes will not be added or removed during inclement weather (e.g., periods of precipitation, high winds). The working face and liner with waste soils will be covered at the end of each work day.

    - An OWTF will be collected for each load and show the staging cell as the ICDF location for the waste.

    - The soil should not present a fugitive dust issue in that it was just excavated. An impermeable cover will be placed over the staging piles. The cover will remain in place except during times of waste removal. If waste is being removed during a precipitation event, then the cover must be replaced between loading periods.

    - Appropriate signage and physical barriers will be placed as directed by the RCT and Environmental Affairs.

- Cover installation, maintenance, and run-on/run-off control

    - A cover will be placed over the waste and secured with wind anchorage (e.g., sand bags) to prevent wind lift and will direct rain and snow outside of the cell berm.

    - The cover may be put in place following the last load for stockpiling each day. It will be folded back and stored (dirty side to dirty side or clean side to clean side) just prior to resuming stockpiling activities. The cover will be replaced at the end of each shift or during precipitation events as required.

    - The staging cell(s) will be inspected weekly and after storms (see Overview 8.4) to ensure the effectiveness of the cover and run-on/runoff control. Needed repairs (patching of cover material) will be performed as soon as weather conditions permit.

- Soil removal and filling of containers for treatment - Soil will be removed, primarily during the winter months, and treated in the decon building. Removal from the staging cell will be done on a “campaign” basis of ten to twenty containers. The objective will be to provide enough material to operate the stabilization unit for approximately 1 week each time soil is removed from the staging cell. The boxes to be used must be of a size to fit the tipper unit of the treatment unit.

- Prior to filling operations, empty waste boxes will be placed near the staging cell. The staging pile cover will be folded back to expose enough of the waste pile for removal operations.

- An empty container will be placed on clear liner material and loaded using appropriate equipment.

- The container lid will be secured and an RCT will take a massilin swipe of the box surface to verify that waste is not being tracked out.

- An IWTS barcode will be affixed to either the box or placed in the OWTF pocket on the box.

- The forklift will take the box to the decon building via the truck scale to obtain a weight for entry into IWTS. The weighed box will be placed in the decon bay to warm to above freezing over the next few days.

- When all containers for a day or campaign have been filled, the loading unit will be wiped down and removed from the staging cell. The Sitewide survey criteria to release a piece of equipment will be utilized. The waste generated will be contained and entered into IWTS for disposition.

- The loader will be returned to the appropriate location.

- The staging cell cover and ballast tubes will be placed back over the pile.

- Staging cell closure and preparation for another waste stream

    - The staging piles will be closed after removal of the waste, at a minimum of every 2 years. Documentation of removal of the waste and elimination of the threat of release to the environment will be required.

    - After a staging cell has been emptied, it will be cleaned to an extent necessary to facilitate closure. This may be as simple as sweeping the liner surface or involve washing down the liner and collecting the contaminated water for disposal. This activity will ensure that no incompatible waste streams are staged in the cells.

    - A review of the hazardous constituents contained in any waste previously placed in the cell will be made against constituents in a new waste stream to prevent the introduction of incompatible wastes.

Meet closure requirements outlined in Section 9 of the ICDF RAWP (DOE/ID-10984) meeting the requirements of 40 CFR 264.554 (k).

6. REFERENCES AND INTERFACES

- PLN-914, "ICDF Complex Waste Tracking System Plan"

- DOE/ID-11005, *ICDF Complex Operational and Monitoring Sampling and Analysis Plan*

- DOE/ID-10886, *ICDF Complex Operations Waste Management Plan*

- DOE/ID-10984, *ICDF Complex Remedial Action Work Plan*

- DOE/ID-11000, *ICDF Complex Operation and Maintenance Plan*

- Overview 8.4, "Inspection of ICDF Storage Areas and Staging Piles."

7. RECORDS

- Inspection records

- IWTS tracking information.

- Operations Logbook entries

- RCT survey logs.

ICDF Complex Inspection

Prepared by	Tracking No.
R. C. Shilkett	8.1
Date	Revision
October 30, 2002	1

1. PURPOSE

The purpose of this procedure is to perform inspections to identify problems with operating the ICDF perimeter fences, access roads, and storm water controls on a weekly basis; inspections after storms and after other events that may impact safe operation will occur by close of the next business day.

- Specifically, these activities include:
- Ensure the integrity of the identified components through a regular inspection process
- Identify necessary repairs or response actions
- Maintain documentation to verify that all inspection requirements and identified actions have been completed.

2. SCOPE AND APPLICABILITY

The inspection is applicable to the ICDF perimeter fence, storm water runoff control ditches, haul and access roads, and internal area fences and gates. Refer to Drawing C-201, "General Site and Stockpile Plan," for general location information.

3. REGULATORY REQUIREMENTS

No ARARs identified.

4. EQUIPMENT

None identified.

5. IMPLEMENTATION

Inspections will be made weekly or following a significant rain, snow, windstorm event or other event that may impact the safe operation of the landfill or evaporation ponds.

Prior to the inspection tour, the inspector will review the previous inspection report to note any deficiencies. The operating log for the time period since the previous inspection will be reviewed for any equipment status changes.

A checklist format will be developed that will address, but not be limited to, the following items:

- Perimeter and inside fences:
  - Are all fences in good condition? Are there any holes, buildup of debris (paper, tumbleweeds), or any other damage?
  - Are gates functional, kept closed, and capable of being locked when an area is not in use?

- Are perimeter warning signs properly placed and in good condition and readable from 25 ft?

- Access and haul roads:
  - Are roads in good condition to allow safe operation?
  - Is there any severe erosion to roads or embankments?
  - Is there any evidence of fuel or other material/waste spills on the roads?
  - Is there adequate drainage? (Small puddles are acceptable, large ponds that will drench the undercarriage of a truck are not acceptable.)
  - Are there sufficient signs to direct truck traffic? Are the signs in good condition and correctly placed?
  - Is there evidence of spills of solid materials?

- Stormwater runoff control ditches:
  - Are ditches clean and free of silt bars and large debris?
  - Are culverts open and free of large debris?
  - Are there any ice dams or accumulations of snow that might impede drainage?
  - Is runoff being directed to the intended areas? Is there any evidence of overflow from the ditches?

Any deficiencies/problems will be noted on the checklist. Actions taken to correct those problems also will be recorded on the checklist or accompanying documentation.

The inspection document will be signed and dated by the individual performing the inspection.

Appropriate response actions must be taken for any noted inspection deficiency. Response actions shall be implemented by notifying the ICDF Complex operations manager at the end of the inspection. The operations manager shall be responsible for implementing response actions upon notification.

The inspection report will be reviewed and approved by the facility manager or his designee.

The individual responsible for submitting work requests resulting from the inspection will be determined by the facility manager or the designee.

The distribution of the inspection report will be determined by the facility manager or the designee.

6. REFERENCES AND INTERFACES

- Drawing C-201, “General Site and Stockpile Plan.”

7. RECORDS

- Completed inspection reports
- Maintenance or response action documentation.

Inspection of the Landfill and Evaporation Pond

Prepared by	Tracking No.
R. C. Shilkett	8.2 and 8.3
Date	Revision
October 30, 2002	1

1. PURPOSE

The purpose of this procedure would be to perform inspections to identify problems with operating the ICDF landfill and evaporation ponds on a weekly basis; after storms and after other events that may impact safe operation inspection will occur by close of the next business day.

Specifically, these activities include:

- Ensure the integrity of the facility systems, structures, and components through a regular inspection process
- Identify necessary repairs or response actions
- Maintain documentation to verify that all inspection requirements and identified actions have been completed.

2. SCOPE AND APPLICABILITY

The inspection is applicable to the ICDF landfill cell, landfill crest pad building, evaporation ponds, evaporation ponds crest pad building, truck loading/unloading station, and dust control/suppression equipment. Refer to Drawing C-201, "General Site and Stockpile Plan," for general location information.

3. REGULATORY REQUIREMENTS

- 40 CFR 264.15(a) "The owner or operator must inspect his facility for malfunctions and deterioration, operator errors, and discharges which may be causing–or may lead to–(1) release of hazardous waste constituents to the environment or (2) a threat to human health. The owner or operator must conduct these inspections often enough to identify problems before they harm human health or the environment."
- 40 CFR 264.15(c) "The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately."

4. EQUIPMENT

None identified.

5. IMPLEMENTATION

Inspections will be made weekly or following a significant rain, snow, windstorm event or other event that may impact the safe operation of the landfill or evaporation ponds the next business day.

Prior to the inspection tour, the inspector will review the previous inspection report to note the volumes of the evaporation ponds, leachate generation amounts, and deficiencies. The operating log for the time period since the previous inspection will be reviewed for any equipment status changes.

A checklist format will be developed that will address, but not be limited to, the following items:

- Landfill cell:
  - Is there evidence of erosion to the embankments?
  - Is there any evidence of fuel or other material/waste spills in the truck unloading areas?
  - Is there evidence of settling of, or cracks (>1/8-in. in width) in, the anchor trenches?
  - Is there any evidence of rodent burrowing or wildlife intrusion (tracks)?
  - Is there evidence of excessive pools of water (from storms, dust control, or compaction) on the operations layer?
  - Is the operations layer free from debris (tumbleweeds)?
  - Is the dust fixative application equipment functional?
  - Is there any indication of fixative not being applied to disturbed areas on a daily basis? Is the fixative providing adequate dust suppression on the disturbed areas of the landfill?
  - Do temporary water lines to the operating areas have leak-tight connections?
  - Are radiation zone ribbons and signs properly positioned?
- Landfill crest pad building:
  - Is the building exterior (roof, walls, door) in good condition?
  - Are floors clean and dry?
  - Is there any evidence of pipe, fitting, or valve leaks?
  - Does the building temperature indicate that the heating/air conditioning is functional?
  - Are the leachate pumps installed in their respective sumps?
  - Does instrumentation indicate that all equipment is functional?
  - Record, from the instrumentation, the amount of leachate in each sump.

- Compare water levels with action leakage rate. If level exceeds the action leakage rate, immediately notify the ICDF Complex operations manager and appropriate personnel.
- Is there any evidence of rodent or bird activity in or around the building?
- Record the amount of leachate removed from recovery sump since the previous week's inspection.
- Is there any liquid in the crest pad building sump?
- Is any calibrated instrumentation within 60 days of calibration expiration?
- Are interior and exterior lighting fixtures functional?
- Are radiation zone ribbons and signs properly positioned?

- Evaporation ponds:
  - Record the water level of both ponds.
  - Compare water levels with action leakage rate. If level exceeds the action leakage rate, immediately notify the ICDF Complex operations manager and Environmental Affairs.
  - Is there evidence of erosion to the embankments?
  - Is there evidence of settling of, or cracks (>1/8-in. in width) in, the anchor trenches?
  - Are there any signs of liner damage or degradation?
  - Is there any evidence of "overtopping" (wind-driven waves washing out of the pond and onto the berm)?
  - Is the minimum of 2 ft of freeboard appearing to be maintained?
  - Is there evidence of an oil sheen on the pond?
  - Are ballast tube systems intact?
  - Is there any evidence of liner wind lift in empty areas?
  - Is there any evidence of sediments not being washed into the flooded regions of the ponds?
  - Is there any evidence of rodent burrowing or wildlife intrusion (tracks)?
  - Are the ponds free from tumbleweeds (wind-blown articles)?
  - Are there any foreign objects or animals observed in the pond?
  - Do temporary water lines for liner wash down have leak-tight connections?
  - Are radiation zone ribbons and signs properly positioned?
  - Is designated life safety equipment available and in good condition?

- Evaporation ponds crest pad building:
    - Is the building exterior (roof, walls, doors) in good condition?
    - Record the flow totalizer readings for each flow meter.
    - Record, from the instrumentation, the current liquid level in all sumps.
    - Are floors clean and dry?
    - Is there any evidence of pipe, fitting, or valve leaks?
    - Does the building temperature indicate that the heating/air conditioning is functional?
    - Does instrumentation indicate that all equipment is functional?
    - Is there any evidence of rodent or bird activity in or around the building?
    - Is there any liquid in the building sump?
    - Is any calibrated instrumentation within 60 days of calibration expiration?
    - Are interior and exterior lighting fixtures functional?
    - Are radiation zone ribbons and signs properly positioned?
    - Are spill kits complete and available?
- Evaporation ponds truck loading/unloading station:
    - Are concrete surfaces clean and free of cracks (>1/8-in. in width) and debris?
    - Are radiation zone ribbons and signs properly positioned?

Any deficiencies/problems will be noted on the checklist. Actions taken to correct those problems will also be recorded on the checklist or accompanying documentation.

The inspection document will be signed and dated by the individual performing the inspection.

Appropriate response actions must be taken for any noted inspection deficiency. Response actions shall be implemented by notifying the ICDF Complex operations manager at the end of the inspection. The operations manager shall be responsible for implementing response actions upon notification.

The inspection report will be reviewed and approved by the facility manager or his designee.

The responsible individual for submitting work requests resulting from the inspection will be determined by the facility manager or his designee.

The distribution of the inspection report will be determined by the ICDF facility manager or his designee.

6. REFERENCES AND INTERFACES

- Drawing C-201, “General Site and Stockpile Plan.”

7. RECORDS

- Completed weekly inspection reports
- Maintenance or response action documentation.

Inspection of ICDF Storage Areas and Staging Piles

Prepared by	Tracking No.
R. C. Shilkett	8.4
Date	Revision
November 4, 2002	1

1. PURPOSE

The purpose of this procedure is perform inspections to identify operating problems at the ICDF Storage Areas and Staging Piles on a weekly basis; inspections after storms and after other events that may affect safe operation inspections will occur by close of the next business day.

2. SCOPE AND APPLICABILITY

This procedure is applicable to the Staging and Storage Annex, full container staging area, tank and container storage area, and the bulk soil stockpile staging area.

3. REGULATORY REQUIREMENTS

- 40 CFR 262.34, "Accumulation Time"
- 40 CFR 264.554, "Staging Piles."

4. EQUIPMENT

None identified.

5. IMPLEMENTATION

Weekly inspections will be performed on all waste container storage areas.

Inspections will be made following a significant weather event (rain, snow, wind) on the next business day. Determination of an additional inspection will be made at the discretion of the ICDF facility manager or designee.

Inspections will include all storage areas and staging pile locations at the ICDF.

Prior to the inspection, the inspector will review the previous inspection report to note any deficiencies for the purpose of observing the status of response actions.

A separate checklist will be used for each storage area and staging pile location. A format will be developed that will address, but not be limited to, the following items:

- Is there any waste at this location? If "no" the inspection is complete.
- Is there an up-to-date copy of the registration form posted at the area?

- Are "NO SMOKING" signs posted in the area if storing RCRA-defined ignitable or reactive waste?
- Are all waste containers labeled with the words “CERCLA WASTE”?
- Are all container labels and marks visible to the inspector?
- Are all non-waste items stored in the area appropriately marked or labeled for identification?
- Is the housekeeping in the area adequate?
- Ensure that waste containers are properly closed.
- Ensure that waste containers are handled and stored in a manner that prevents leakage.
- Is there adequate aisle space for personnel and equipment to respond to emergencies and/or conduct inspections? Where containers have been placed in a “dense pack” configuration for radiation dose reduction purposes, an exception is made for no aisle spacing.
- Are all waste containers closed except when adding or removing waste?
- Are tarps on roll-on/roll-off containers free from holes or other damage and secured to the container?
- Are tailgate latches on roll-on/roll-off containers secure and appear to be in good working condition?
- Is there evidence of free liquids leaking from a container?
- If a container is found to be leaking, the inspector will contact the INTEC shift supervisor who will initiate a coordinated response to the situation.
- Are all wastes segregated within the area to maintain requirements for compatibility?
- Do quantities/containers recorded in the log book equal quantities/containers stored in the area?
- Are there, or have there been, any releases or spills in the area since the last inspection?
- If the spill or release has been remediated, was the remediation documented on this checklist?
- Do containers storing liquids have secondary containment, or are they otherwise prevented from discharging through dikes or berms?
- Verify that dikes or berms, if present, restrict run-on precipitation from entering storage areas.
- For containers storing liquids, verify that the containment has capacity for either 10% of the total volume in the containers or has the capacity to store the volume of the largest container, whichever is greater.
- Are all containers and/or PCB items in good condition with no signs of leakage or deterioration?

- Is PCB containment volume equal to two times the internal volume of the largest PCB article or PCB container, or 25% of the total internal volume of all PCB articles or containers, whichever is greater?

- Is the entrance to PCB storage marked with a large PCB M_L mark?

- Is each PCB item or container marked with a PCB M_L or M_S mark?

- Are items marked with an out-of-service date, or is there an inventory list indicating out-of-service dates for items stored within a container?

- Have previously identified deficiencies undergone resolution? Indicate status on back of inspection form.

- Ensure that there is no freestanding liquid within sumps or collection areas. (If freestanding liquid is discovered, immediately notify facility manager.)

- Verify that containers in "dry storage" are elevated or otherwise protected from contact with accumulated liquid.

- For a staging pile, are controls for fugitive dust adequate?

    - If waste is being placed or removed, is fixative or water application sufficient to control dust?

    - If the staging pile is inactive, is the cover tarp in good condition (no tears or damage) and the ballast tubes placed to prevent wind lift?

- Is there evidence of waste being tracked out of the staging pile location?

- Are the required signage and physical barriers in place?

- Is there evidence of inadequate drainage, run-on, or run-off control?

Any deficiencies/problems will be noted on the checklist. Actions taken to correct identified problems will be recorded on the checklist or accompanying documentation.

The inspector's name will be printed on the form. The inspector will sign and record the date and time of the inspection.

6. REFERENCES AND INTERFACES

- None.

7. REPORTS

- Completed inspection reports

- Maintenance or response action documentation.

Decon Building Inspection

Prepared by	Tracking No.
R. C. Shilkett	8.5
Date	Revision
October 30, 2002	1

1. PURPOSE

This overview describes procedures to perform inspections to identify problems with operating the decon building and ancillary equipment on a weekly basis; after storms and after other events that may impact safe operation inspections will occur by close of the next business day.

Specifically, these activities include:

- Ensure the integrity of the identified systems and components through a regular inspection process
- Identify necessary repairs or response actions
- Maintain documentation to verify that all inspection requirements and identified actions have been completed.

2. SCOPE AND APPLICABILITY

This inspection is applicable to the decon building, process exhaust systems; contaminated equipment pad, treatment units, and decontamination equipment.

3. REGULATORY REQUIREMENTS

40 CFR 264.1101(c)(4) “Inspect and record in the facility’s operating record, at least once every 7 days, data gathered from monitoring equipment and leak detection equipment as well as containment building and the area immediately surrounding the containment building to detect signs of releases of hazardous waste.”

4. EQUIPMENT

- An oil/water interface level indicator or semiclear bailer.

5. IMPLEMENTATION

Inspections will be performed weekly or following a significant rain, snow, windstorm event or other event that may impact the safe operation of the decon building on the next business day.

Prior to the inspection tour, the inspector will review the previous inspection report to note any deficiencies. The operating log for the time period since the previous inspection will be reviewed for any equipment status changes.

A checklist format will be developed that will address, but not be limited to, the following items:

- Decon building
  - Is the building exterior (roof, walls, door) in good condition?
  - Are floors clean and dry?
  - Is there any evidence of damage to the floor/sealant from roll-on/roll-off containers?
  - Is the trench system clean and clear of sediment?
  - Is there any evidence of floor surface deterioration, cracks (>1/8-in.), gaps, or corrosion?
  - Are access doors operational and door seals in good condition and able to contain fugitive dust emissions?
  - Does the building temperature indicate that the heating system is functional (cold weather only)?
  - Is the level of stored/treated waste within the containment walls of the building so that the height of any containment wall is not exceeded?
  - Is there any evidence of waste being tracked out of the building by personnel or equipment?
  - Monitor and record the level of fluid in the oil-water separator using an oil-water interface level indicator or a semiclear bailer.
- Process exhaust systems
  - Are the process exhaust systems for the decon bay and treatment area operational?
  - Are the instrumentation readings for differential pressure across filter banks within the acceptable range?
- Contaminated equipment pad
  - Is there any evidence of surface deterioration, cracks (>1/8-in.), gaps, or corrosion?
  - Is the grating over the drainage trench free of debris so that run-off will not pool on the slab?
- Treatment unit
  - Is the treatment unit operable (no out-of-service tags)?
  - Is there any evidence of wetted waste leaking out of the unit?
  - Is there any evidence of dust leaking out of the unit?
  - Is there any evidence of corrosion damage to the treatment unit?

- Are instrumentation readings for any fugitive emission control system within an acceptable range?

- Is there any evidence of hydraulic or water leaks from the treatment unit?

- Is there any evidence of treatment chemical or waste spills?

- Are treatment chemicals properly labeled and stored?

- Decontamination equipment

  - Is the decontamination equipment operable (no out-of-service tags)?

  - Is there any evidence of leaks from the equipment?

  - Are required tools properly stored?

  - Are decontamination chemicals properly labeled and stored?

Any deficiencies/problems will be noted on the checklist. Actions taken to correct those problems will also be recorded on the checklist or accompanying documentation.

The inspection document will be signed and dated by the individual performing the inspection.

Appropriate response actions must be taken for any noted inspection deficiency. Response actions shall be implemented by notifying the ICDF Complex operations manager at the end of the inspection. The operations manager shall be responsible for implementing response actions upon notification.

The inspection report will be reviewed and approved by the facility manager or his designee.

6. REFERENCES AND INTERFACES

None identified.

7. RECORDS

- Completed inspection reports

- Maintenance or response action documentation.

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Appendix B

Equipment List

Appendix B

Equipment List

Operations at the ICDF Complex will include both work in contaminated (hot) and clean (cold) areas. Some of the equipment items will be permanently placed in the landfill or other areas that are contaminated. Although some of the equipment items used during operations will work in both areas, such as the forklift, it is assumed that the piece of equipment will be allowed to leave the hot area on condition of a release by the appropriate environment, safety and health personnel.

This equipment list (see Table B-1) only includes equipment that will be purchased following construction of the ICDF Complex. All items of equipment such as pumps, valves, etc. are shown in the engineered drawings prepared by the construction subcontractor. The drawings have been submitted in the appropriate Remedial Design/Construction Work Plan.

Table B-1. ICDF equipment list (permanent and temporary).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Landfill Operations			
Track-type tractor	X		
Backhoe loader w/thumb	X		
Wheel Loader	X		
Cargo container (equipment storage units)	X		
20,000-lb. forklift	X		
Nuclear density gauge/Humbolt GeoGauge	X		
Hoisting/rigging equipment			X
ProGuard SB Hydro Seeder	X		
Daily (ProGuard SB)	X		
Winter (ConCover SW)			X
Roll-truck with hoist	X		
Roll-on/roll-off containers with tarps			X
Water truck	X		
Passenger vehicles			X
Hot-water pressure washer			X
Portable canopy for pit personnel safety			X
Porta-Potty	X		
Bar code printer	X		
Personal computer	X		
B&W laser printer	X		
Scanner			X
Fax machine			X
Copy machine			X
Telephones	X		

Table B-1. (continued).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Radio base unit	X		
Radios (mobiles & handhelds)	X		
Hand-operated compactor			X
Ecological monitoring traps			X
Miscellaneous ecological equipment			X
Networking equipment	X		
High-volume landfill leachate pump	X		
Pump pressure transducer unit	X		
MOYNO 2-TL8 Progressive Cavity Pump	X		
Portable dose rate instrument	X		
Portable scaler for RadCon swipe counting	X		
Hand-held friskers - alpha and beta	X		
Alpha probe for friskers	X		
Beta probe for friskers	X		
Bench-top scaler	X		
Digital dosimeters	X		
47-mm cassettes	X		
Tygon hoses	X		
Portable air sampler - hi vol	X		
Portable air sampler - low vol	X		
12-volt battery recharger	X		
Telescoping dose rate meter	X		
PCM-2		X	
Spill kits	X		
Depth markers	X		
Wall-mounted winch	X		
Terri-cloth wipes	X		
Miscellaneous hand tools	X		
HEPA-filtered vacuum			X
Calibrated flow instrument			X
Coffer-dam material			X
Portable generator	X		
Emergency rescue equipment	X		
Fire extinguishers	X		
Hoses	X		
SSSTF Equipment			
Continuous alpha air monitors (CAMs)		X	
Cables for alpha CAMs		X	
Alpha-7 radial head		X	

Table B-1. (continued).

Permanent Equipment	Required To Open Landfill	Required To Open Treatment Unit	Other
Alpha-7 in-line head		X	
Alpha-7 sources Pu-239		X	
Alpha-7 sources Am-241		X	
Alpha CAM filter tray assembly for in-line head		X	
Alpha CAM source holder assembly for in-line head		X	
Alpha CAM 1-1/4-in. fitting for in-line head		X	
Alpha CAM client software		X	
Alpha CAM calibration software		X	
Millipore 5-micron filters		X	
Beta air monitors		X	
Beta air monitors detector head		X	
Beta CAM Sr-90/Y-90 sources		X	
Beta CAM Cs-137 sources		X	
Air pumps		X	
Radiation area monitor control unit		X	
Radiation area monitor detector		X	
CAM carts		X	
Air sample lines		X	
Air sample lines connectors		X	
Detector for portable scaler		X	
Counting tables		X	
CAM/RAM table		X	
Temporary Equipment			
Road grader			X
Flatbed truck			X
Crane			X
Dump truck			X
Drum roller			X

B-2. ICDF Critical Spare Parts/Equipment

Table B-2 lists the critical spare parts and equipment items that will be maintained at the facility to ensure the protectiveness of the proposed remedy. The ability to measure and remove leachate from the LCRS is the most significant function.

Table B-2. ICDF critical spare parts/equipment.

Item	Number Needed	Description
High-volume landfill leachate pump	1	EPG Companies Inc., model WSDPT 17-2 SurePump™ with 2-HP 460 VAC 3-phase motor. Includes 200-ft jacketed motor lead, submersible level sensor with 200-ft lead.
Pump pressure transducer unit	2	EPG Companies Inc., model PT05X LevelMaster™ submersible level sensor (this sensor fits all EPG pumps).
TARBY 2-TL8 progressive cavity pump	1	Replacement high-pressure pump for the ConCover All-Purpose Sprayer (CAPS) unit for application of daily/long-term cover materials.